January-December
Vol. 39, Nos. 1-12

FOR CONSULTING ENGINEERS, MECHANICAL (HEATING, PIPING & AIR CONDITIONING) CONTRACTORS, AND ENGINEERS WITH PLANTS AND BIG BUILDINGS

1967 VOLUME INDEX

HEATING PIPING & AIR CONDITIONING

Air Conditioning 2
Heating 7
Piping 10
Commercial Buildings 13
Industrial Buildings 14
Institutional & Public Buildings 14
HPAC Data Sheets 15
HPAC Engineering Data Files 15
HPAC Legal Pages 15
NLRB 15
Computer Corner 16
HPAC Conference: Single Energy Source Systems 16
HPAC Conference: Air and Water Pollution Control 16
Author Index 16

THE VOLUME INDEX lists the feature editorial material appearing in Heating, Piping & Air Conditioning, and also items from the Open for Discussion, Question of the Month, and You'll Want To Know departments of the magazine. This material is indexed by type of system (heating, piping, or air conditioning), by type of construction (commercial, industrial, or institutional and public buildings), and by author. In addition, HPAC Data Sheets, HPAC Engineering Data Files, HPAC Legal Pages, and HPAC conference papers are indexed separately.

A month and page number that appears in italics in the index refers to comments on the indexed article. These comments appeared in the Open for Discussion pages.

Heating, Piping & Air Conditioning is published monthly by Keeney Div., Reinhold Publishing Corp., a Subsidiary of Chapman-Reinhold, Inc., 10 S. LaSalle St., Chicago, Illinois 60603.

SUBJECT INDEX

AIR CONDITIONING

GENERAL

Abolishing Student Draft Deferments Would Add to Educated Manpower Shortage Problem ....Aug 50
"Action" Theme of ARI Show in January '68 ....Sep 58
Add to Equal Employment Law ..Sep 56
Adding Cooling in an Industrial Plant, by F. F. Stevenson ....Dec 96
A-E's and Unions To Be Discussed ....Nov 202
AEC Considering Nuclear Plant in Maine ....Dec 40
AEC Issues Nuclear Plant Permits ....Jun 42
AEC Permits Two Nuclear Plants in Illinois ....May 60
AGA To License Fuel Cell Patents to Manufacturer on Nonexclusive Basis ....Jun 56
Ahart Gets Contract for Thermodynamic Analysis of Three Post Office Buildings ....Nov 46
Air Filter Institute To Merge with ARI ....Jul 46
Air Moving Device Shipments Up 10% ....Jul 48
Air, Water Pollution Problems, Solutions in Chicago Area Discussed at Conference ....Dec 42
All New Kansas Schools Fully Air Conditioned (Open for Discussion), by G. W. Reida ....*Jul* *86*
American Industrial Hygiene Conference Will Examine Noise, Air Pollution, Stack Design ....Apr 48
An Insurer's View of the Air Conditioning and Refrigeration Industry, by D. A. Naughton and W. B. Skidmore ....May 132
ARCA Forms Technical Training Institute To Help Fill Industry Demand for Mechanics ....Oct 46
ARCA Names Hale Executive Director ....Jul 207
ARCA, NWNHACA Plan To Merge ....Nov 42
ARI Elects Section Chairman ....Mar 270
ARI Initiates Certification Program for Central Station Air Handling Units ....Jul 48
ARI Will Ask Government To Declare Air Conditioning Industry "Essential" ....May 256
ASHRAE Begins Studies on Thermal Environment ....May 259
ASHRAE Names Special Task Group To Study Causes, Effects, Correction of Air Pollution ....May 58
Assumptions, Conditions, Limitations in Evaporative Cooling Design Method (Open for Discussion), by F. G. Furse ....*Jun* *89*
ASTM Elects Mardulier President ....Aug 195
Building Expected To Forge Ahead in 1967 Despite Tax Situation ..Jan 53
Building Subcontractor Failures Reported ....May 52
Campbell New York Engineer of the Year ....Aug 52
CEC Conference Probes GAO Study of Federal Architect-Engineer Contracting Procedures ....Jun 46
CEC Publishes 1967-68 Directory ....Oct 197
Central Plant Heat Reclaim System Serves University Campus Complex ....Dec 44
Central Plant Will Supply 20,000 Tons, 60,000 MBtuh for Complex of Buildings ....Jan 58
Central Underground Plant Will Condition Four-City-Block Complex in Johannesburg ....Oct 48
Chairman for Chicago Specialty Contractors ....Jan 56
Chamber of Commerce President Urges Coordinated Effort in Fight Against Pollution ....Mar 58
Check These Items on Site Visits (Open for Discussion), by H. Kreisman ....*Sep* *91*
Choose District Plant for One-Stop Government Complex, by S. A. Fredrickson ....Jun 108
Clarifies Ventilation Code for Virginia Schools (Open for Discussion), by N. R. Waldrop, Jr. ....*Jul* *86*
Clinic on Design, Operation, Mainte-

nance To Be Held At American Power Conference ....Apr 207
Committee Formed To Interpret ICBO's Uniform Mechanical Code ....Dec 48
Compare Alternate System Costs for District Chilled Water Plant, by J. S. Blossom ....Jul 103
Computer Cuts Time for Project Specs ....Dec 38
Considerations in Designing, Expanding District Plants (Open for Discussion), by M. Backer ....*May 100*
Conventional Air Conditioning More Economical than Evaporative Cooling (Open for Discussion), by A. Aharoni ....*Jun 89*
Continuous Duty/Standby: More for Less, by M. D. Ringler .... Sep 120; *Nov 75*
Cooling Computers, by M. N. Birken ....Jun 125
Cooper Union Sets Up Air Pollution Center ....Aug 52
Cost Engineers Will Meet in Cleveland ....Jun 218
Criteria for All-Electric System Use, by A. H. Smith ....Jan 181
CS/D Not Practical When Cooling Not Required (Open for Discussion), by M. Olchoff ....*Nov 75*
CSI Schedules Annual Competition ....Nov 202
Danish Professor Develops Equation That Predicts Environmental Comfort Conditions ....May 60
Data Consultants Will Serve Engineers ....Jan 68
Describes Division of Labor with Radiant Panel Ceilings (Open for Discussion), by I. C. Park, Jr. ....*May 96*
Development of Natural Gas Fuel Cell Total Energy System Is Goal of New Organization ....Apr 48
Diesel Fuel Powered Total Egergy Plant To Serve Pennsylvania Turnpike Service Plaza ....Sep 56
District Steam, Electrically Driven Chillers, Dual Duct Systems for GSA Bldg. ....May 52
Don't Segregate Air and Water Pollution, Control Both—Now ....Aug 44
Doubts Practical Value of Competitive Bidding Formula (Open for Discussion), by H. Kreisman ....*Jan 101*
Drexel Institute Courses Will Cover Corrosion; Boiler, Cooling Water Treatment ....Jul 44
Drexel Institute Gets Federal, Local Grants To Study Water, Solid Waste Pollution in East ....May 62
Eighty Year Old Theater Reopens, by H. J. Scharres ....Nov 106
Electrical Control Systems Using Air Compressors??? (Open for Discussion), by W. L. Avery ....*Jan 101*
Engineering Professionalism: Tie Science to the Needs of Society ....Jun 41
English Study Confirms Savings from Job Planning ....Nov 35
Estimate for Leaktight Ceiling with HEPA Filters May Be High (Open for Discussion), by R. H. Avery ....*Jan 102*
Firm Formed To Study Air Pollution ....Jul 48
Five Research Projects Given Top Priority at U of I Air Systems Center ....Jul 52
Foam Insulation To Minimize Temperature Fluctuations in Film Manufacturing Plant ....Jun 52
Forum on Fire Dampers in Air Handling Systems on the Agenda for ASHRAE Meeting This Month ....Jun 42
Four Plans for Expanding District Chilled Water Systems by M. J. Wilson ....Jan. 148; *Feb 67; May 100*
FPC Authorized Construction of 3,403 Miles of Natural Gas Pipelines in Second Quarter ....Oct 44
Future Engineer Is Girl on the Go-Go ....Aug 42
Gas Company Taps Its Lines To Operate Total Energy Plant in New Office Building, by L. Smith ....Jun 122
Gas Industry Recommends Changes in Proposed Federal Safety Regulations ....Jun 52
Gas Total Energy System for New $4 Million Service Center ....Jan 60
Gas Total Energy System Generates 8000 KW for 28 Story Office Building ....Oct 44
Gives Case History Involving CD/S (Open for Discussion), by R. T. Danks ....*Nov 75*
Government Urged To Underwrite Cost of Air Pollution Abatement ....Jul 43
Government's Role in Pollution Control on Agenda for Southeastern Plant Conference ....Jul 50
Hearings Start on Promotional Practices by Illinois Utilities ....Mar 56
Heat Pumps Interchange Btu's To Air Condition New Hospital Wing, by A. R. Chappell ....Dec 93
Heating and Air Conditioning USASI Standards Board Established ..Feb 37
High Velocity Peripheral, Low Pressure Interior Air for 12 Story Building ....Feb 38
Honors, Awards Given at ASHRAE Meeting ....Aug 44
How America's Schools Are Heated and Ventilated, by L. Smith .... Jan 139; *Jul 86*
How To Select Materials for Power Plants Will Be Told at Metallurigal Conference ....Jan 54
HPAC Reappoints Seven to Board Of Consulting, Contributing Editors ....Apr 39
IEEE Conference Will Explore Economics of All-Electric Complexes, Thermoelectric Systems ....Mar 60
In-Depth Look at Electric Heating and Controls, by G. W. Dunn ..Jan 184
Industrial Relations Council for Pipefitters Elects Lynch Chairman ..Apr 44
Industrial Ventilation Conference Highlights Air Pollution ....Dec 44
Industry Manpower Survey Report Will Be Presented at ARI Meeting This Month ....Nov 203
Inlets and Outlets, Exhaust Air Cleaners Topics for Industrial Ventilation Conference ....Jan 64
Installed Value of Central Station Systems in 1966 Estimated at Nearly $1.28 Billion ....Jun 58
Installed Value of Unitary Air Conditioners in 1966 Amounted to $1.4 Billion, Up 18 Percent ....Jul 50
Instant Pre-qualification for Chicago Area Mechanical Specialty Contractors ....Jul 56
Integrated Ceiling System Conditions Bank's Operations Center ....May 232
International Consulting Engineers Congress Will Probe "Design Team" Approach to Building ..Apr 42
IRC Settles Colorado Labor Dispute ....Aug 48
IRC Settles North Dakota Dispute, Gives Interpretation of Texas Agreement ....Nov 48
Kroeker Oregon Engineer of the Year ....Jul 44
Lack of Manpower, Other Industry Problems Cited at ARI Annual Meeting ....Jan 60
Leslie Silverman Industrial Hygiene Fund Established at Harvard School of Health ....Mar 56
Liquefied Natural Gas Plant Will Store up to 50,000,000 Gallons ....Sep 50
Lists Engineering Problems in Bioclean Room Guidelines (Open for Discussion), by O. F. Smith ....*Jan 102*
Low Velocity Reheat, High Pressure Air Induction for 20 Story Australian Office Building ....Oct 38
Management and Technology Theme of Plant Engineering, Maintenance Show This Month ....Jan 56
Management Ideas in Action Keynote MCAA Convention ....Jun 112
Manpower Problem Is Impediment to the Future, McGrath Tells ASHRAE ....Mar 49
Masking the Moan from the Multizone, by A. D. Sullivan ....Jun 145
MCA of Iowa Formed, Cummings President ....Feb 37
McCormick Place Fire—Study Shows Prevention Measures Inadequate, Reveals Other Shortcomings ....Oct 115
Meanwhile, Back at the Reversed Golden Triangle (Open for Discussion), by H. G. Knutson ....*Jul 86*
Mechanical Contractors Tell How Grooved Pipe, Mechanical Couplings Save Them Time and Money, by J. H. Krooss ....Sep 101
Mechanical Systems Designed for Safety In Israeli Research Reactor Building, by S. Agnon ....Oct 137
Mechanics Welding Society Gives Merit Award to Edward A. Hobart ....Aug 46
Merits of Central Control Panel for Air Conditioning Discussed at Conference ....Mar 54
Microbial Control in Spotlight at AACC Meeting ....Sep 140
Moonlighting in Waikiki, by F. H. Kohloss ....Oct 99
More Precautions For Lab Hood Design (Open for Discussion), by E. L. Walls ....*May 92*
Motel Switches to Gas Absorption Air Conditioning as Part of Modernization ....Aug 183
Move Up to Complete Office Air Conditioning, by L. T. Avery ..May 138
NACHVRO Elects Officers, Directors ....Apr 46
National Commission on Codes, Zoning, Taxes, Development Standards Will Study Urban Areas ....Mar 60
National Conference Hears Call for Action on Air Pollution Control, by T. Elliott ....Feb 112
National Conference on Air Pollution Held ....Jan 58
National Engineering Academy To Advise HUD ....Oct 46
Navy Awards Certificate of Appreciation for Joint Venture Architect-Engineer Project ....Aug 42
NBS Develops Apparatus for Measuring Thermal Expansion of Materials at High Temperatures ..Oct 46
Negative Impressions of Clean Rooms Are Valid (Open for Discussion), by O. F. Smith ....*Aug 79*
Need More Information for Lab Hood Design (Open for Discussion), by K. E. Robinson ....*May 91*
Nevins Engineering Dean at Kansas State ....Sep 48
New Jersey Court Case Allocates Electric Heating Equipment to Mechanical Contract ....Jun 50
New, Improved NSPE Contract Documents ....Oct 196
New Tube Mill Produces Copper Tube Coils up to Four Miles Long ....Jan 54
Newly Formed Group To Conduct Pilot Study on Water Usage in

Chicago Buildings ....Nov 42
NFPA Approves Use of Continuous Duty Standby Engines for Hospitals ....Aug 52
NFPA Reports on Building Fires ....Jun 48
NLRB: Federal Labor Law and the National Labor Relations Board ....Jul 98
NLRB: Its Role in Jurisdictional Disputes ....Nov 118
NLRB: New Groundrules for Lockouts ....Dec 133
NLRB: The Mechanism of Disputes ....Aug 119
NLRB: The Story Behind Work Preservation ....Nov 119
Nonresidential Building Construction Contracts Came to $1.8 Billion This August ....Nov 48
Nonresidential Building Construction Contracts Estimated at $19.2 Billion in '67 ....Sep 240
Nonresidential Building Construction Contracts Estimated at $20.5 Billion in '68 ....Dec 46
Nonresidential Building Construction Contracts Soared To $2.1 Billion in June ....Oct 42
Nonresidential Building Construction Contracts Totaled $1.713 Billion in March ....Jun 56
Nonresidential Building Construction Contracts Totaled $1.83 Billion in April ....Jul 43
Nuclear Power May Supply Half of All Electricity by Year 2000 ..May 51
Number of Buyers of Equipment for Plants Revealed in National Yellow Pages Survey ....Jun 48
Oil Heat Industry Calls For More Realistic Approach to Air Pollution Control Regulations ....Mar 52
On-Shore Central Plant Supplies Hot, Chilled Water to Off-Shore Restaurant ....May 56
Permits Issued for Four Nuclear Plants ....Jul 44
Plan Air Pollution Control Program Now for Existing Installations ....Dec 35
Planning Is the Key to Action, Federal Encroachment; Topics at AGA Convention ....Jan 68
Preventive Actions Needed Now To Increase Reliability of Equipment in Ammonia Plants ....Dec 40
Proposed Revised Constitution for NSPE Fails To Achieve Two-Thirds Majority Vote ....May 62
Reduce Illinois Utility Promotion Practices ....Aug 46
Report Analyzes Operating Cost of Air Conditioning in Office Buildings ....Jun 42
Report Summarizes Current Methods of Controlling Emissions from Nitric Acid Plants ....May 66
Results of Bioclean Room Survey, by J. D. Stockham, C. Hagen, S. Miller, M. Nelson and D. Roberts ....May 115; *Aug* 79
Seminar Stresses Importance of Environmental Control in Buildings ..Jul 50
Single Energy Control Center Will Handle 19 Million KW Throughout New York ....Nov 204
Sixtieth Annual APCA Meeting: Economics, Manpower, Control, Sampling, Stack Analysis ....May 56
Stainless Cooling Tower Is Decorative, Functional, by G. H. Weiner and A. A. Polizzi ....Jun 148
Strong Voluntary Standards System Urged To Prevent Mandatory Federal Regulation ....Mar 268
Students Design House of Future: Modular Structure with Built-in Self-purification ....Jul 46
Study Shows How To Select Lab Hoods To Cut Cooling Costs, by J. R. Lynch ....Jan 133; *May 91, 92*
The How and Why of Site Visits, by L. L. Perry, Sr. ....Aug 103; *Sep 91*
The Marks of Competence in Engineering Educators (Open for Discussion), by C. L. Harndon ....Jul 90
The Training of Plant Engineers (Open for Discussion), by R. T. Danks ....*Sep 94*
Tielines for New Building Rerouted to Maintain Services in Adjacent Buildings ....Jan 62
Total Water Treatment for City Within a City, by W. A. Haver and L. C. Bishop ....Oct 110
Training for Plant Operators at Penn State University (Open for Discussion), by J. Everetts, Jr. ....*Aug* 79
Truog Nichols Forms Energy Company ....Jul 48
Twenty Years of Power Plant Short Courses, by E. F. Hebrank and S. Konzo ....Jun 129, *Aug 79; Sep 94*
U.N. Names Sage Special Consultant ....Nov 44
Unitary Air Conditioner Shipments Up 1 Percent in First Quarter of 1967 ....Aug 44
Unitary Air Conditioner Shipments Up 10 Percent in First Half of 1967 ....Nov 50
Unitary Air Conditioner Shipments Up 40 Percent in Third Quarter of 1966 ....Feb 40
Unitary Air Conditioner Shipments Up 18 Percent in 1966, Total 957,048 Units ....Jun 44
United Association Plans 14th Annual Instructor Training Program ....Jul 52
U.S. Education Office Lists NATTS Com. ....Oct. 196
USASI Committees Plan Precoordination of Building Components and Systems ....Oct 42
Utilities Are Taking Steps To Prevent Future Power Failures ....Feb 42
Utilities, Industrial Plants Produced Nearly 108 Billion KWH of Electricity This March ....Aug 50
Utility Flexibility in School Science Labs Discussed, a Case History Cited at Seminar ....Mar 58
Value of Air Conditioning Installed in '68 Will Be Nearly $3.5 Billion, Survey Shows ....Oct 40
Variable Volume Air Supply Selected To Air Condition Triangular Office Building ....May 112; *Jul 86*
Variable Volume Air Systems Cool Computers, People in Bank's New Operations Center ....Dec 77
Ventilation Design for Radiochemical Laboratories at Nuclear Research Center, by S. Agnon ....Nov 122
Vinther Will Lead ASHRAE in Developing Manpower, New Members ....Aug 41
Wash. CEC Conducts Engineering Seminars ....May 66
Welding Procedures, Pipe Bending, Insurance Will Be Covered at 78th MCAA Convention ....Apr 46
Where Total Energy Systems Appear Feasible, by T. Elliott ....Jul 116

FUNDAMENTAL

A Process Cooling Tower and Its Control, by A. J. Cerofeci and E. N. Seiler ....Apr 113
Adopt Method Now, Refine It Later (Open for Discussion), by R. Lindahl ....*Apr 82*
Air Flow Around Buildings, by J. H. Clarke ....May 145; *Jul 86*
Analyzing Dual Duct Performance Under Varying Load Conditions, by D. R. Harper ....Jan 156; *May 94*
APEC Readies Computer Load Program ....Jan 155
Asks Clarification of Economic Analysis of Systems (Open for Discussion), by M. Meckler ....*Feb 68*
ASTM Subcommittee Begins Work on Text (Open for Discussion), by H. J. Sabine ....*Apr 80*
Balance and Control of Internal Heat Source Systems, by D. L. Grumman ....Jan 189
Cellular Cooling Tower Fill, by G. W. Meek ....Dec 84
Check End Reflection, Air Flow Measurement (Open for Discussion), by R. G. Nevins ....*Apr 88*
Chelants: New Methods of Cleaning and Maintaining Piping Systems, by C. M. Loucks ....Jul 95
Comfort: Yardstick for Industrial Ventilation, by T. Elliott ....Mar 128
Control Systems for Buildings Today ....Jul 153; *Sep 91*
Correlate Air Handling Needs with Fire Risks (Open for Discussion), by A. I. McFarlan ....*Dec* 55
Describes Silencer Tests, Results in Britain (Open for Discussion), by G. Berry ....*Apr 84*
Design Thermal Conductivity Values for Fiberboards and Particleboards ....Nov 116
Do Standardized Specs Lead to Generalization? (Open for Discussion), by A. H. Smith ....*Aug 84*
Economic Aspects of Fuels and Systems in a High-Rise Apartment, by S. A. Silver ....Jan 194
Energy Sources of the Future, by W. T. Reid ....May 107
Energy Utilization in Today's Buildings, by D. L. Grumman ....Aug 123
Estimation of Air Infiltration Appears To Be Oversimplified (Open for Discussion), by G. H. Green ....*Jul 88*
Five Questions To Answer in Equipment Selection, by G. W. Neal Aug 109
Gas Engines Drive Chillers at Detroit's Airport Complex ....Jan 354
General Procedure for Economic Analysis of Onsite Energy Systems, by D. Sage ....Apr 149
Handling Input Data in Load Calculation Program, by J. R. Ahart ....Apr 161
Heat Exchanger Failures: Causes and Remedies, by F. Gall May 118; *Aug 80*
High Reliability in Environmental Systems (Open for Discussion), by W. Viessman ....*Oct 81*
How Insulating Glass Cuts Cooling Loads, by C. W. Pennington ....Aug 89
How To Avoid Mechanical Design Problems in Laboratory Facilities, by S. Heider ....Apr 118; *Aug 80*
How To Check Fan Stability on Oversized Air Handlers, by A. N. Rogers ....Aug 127; *Sep 92*
How To Control Electric Motors May 167
How To Determine Building Infiltration Rates at Low Reynolds Numbers, by M. Meckler Mar 107; *Jul 88*
How Up-To-Date Codes Serve Industry, by C. M. Barnes ....May 129
Input Approximations Make New Infiltration Procedure No Better (Open for Discussion), by H. J.

Schrei ..... *Jul* 88
Low Velocity, Low Pressure Dual Duct Systems Difficult To Balance (Open for Discussion), by R. W. Flanagan ..... *May* 94
Maximize Performance, Minimize Maintenance with Compressor-Drier for Control Air, by D. H. Spethmann and R. O. McDonald .....Feb 73
Measurement and Analysis of Air and Water Pollutants, by J. W. Brant .....Dec 60
Need Round Robin Testing To Validate Test Method (Open for Discussion), by M. J. Kodara ....*Apr* 82
New Approach to Chilled Water Control, by R. E. Anderson .....Oct 130
New Ceiling System Tested in New Air Lab, by L. S. Ries .....Sep 143
New Directions in Building Fire Safety .....Sep 165; *Dec* 55
No Agreement Yet on Rating with Air Flow (Open for Discussion), by G. J. Sanders .....*Apr* 80
Nomograph Permits Rapid Estimates of Equipment Cost, by F. Caplan .....Dec 99
Outline Input Data for Load Calculation Program .....Feb 129
Outline Output from Load Calculation Program .....Mar 171
Pollution Abatement: The Role of the FWPCA, by A. Printz .....Dec 68
Procedure Must Be More Specific (Open for Discussion), by L. W. Goodfriend .....*Apr* 86
Qualifies Method for Smoothing Out Fan Stall Dip (Open for Discussion), by R. A. Gerlitz .....*Sep* 92
Re-entry Avoided with Low Exhaust, High Intake Stacks (Open for Discussion), by R. S. Brief .....*Jul* 86
Reliability Analysis: A Management Method for Today's Businessman, by D. K. Miller .....Jul 123; *Oct* 81
Reliability in Air Cooled Condensers, by D. Kramer .....Jul 127; *Oct* 81
Removing Condensate from Heat Exchangers (Open for Discussion), by J. S. Spear .....*Aug* 80
Shading Coefficient Depends on Which Side of Pane Has Coating, (Open for Discussion) by C. W. Pennington .....*Jul* 85
Solar Energy: Its Use and Control, by J. I. Yellott ....Mar 114; Apr .....105; *Jul* 85
"Split-Function" Cooling Cycle for Vertical Laminar Flow Clean Rooms, by J. A. Weber .....Nov 113
Standardization of Specifications, by E. P. Rossman .....Jun 133; *Aug* 84
System Reliability: Key to Manufacture of Semi-Conductors, by O. F. Smith, Jr. .....Jul 129; *Oct* 81
Tells Experience with Recirculated Lab Air, Auxiliary Supplied Hoods (Open for Discussion), by E. J. Williams .....*Aug* 80
Test Fan, Silencer Together If Not Remote (Open for Discussion), by C. J. Trickler .....*Apr* 80
Test Sidewall Grille Discharge Characteristics, by H. E. Straub .....Oct 126
The Confusion in Testing and Balancing of Air Conditioning Systems, by R. E. Stockwell .....Jul 114
The Future in Air Pollution Control, by J. H. Ludwig .....Dec 65
The Higher the Velocity, The Less Useful the Unit (Open for Discussion), by L. F. Yerges .....*Apr* 82
Universal Building Complex Load and Energy Simulation Computer Program, by J. S. Askari .....Sep 106
What Relationship Between Self-Noise, Pressure Drops? (Open for Discussion), by C. N. Rink ....*Apr* 79

CLEANING, DUST COLLECTION

Air Flow Around Buildings, by J. H. Clarke .....May 145; *Jul* 86
American Industrial Hygiene Conference Will Examine Noise, Air Pollution, Stack Design .....Apr 48
Clean Room Facility Modified To Provide Winter Humidity Control Nov 44
Consulting Firm Begins Operating Mobile Air, Water Pollution Testing Laboratory .....Nov 46
Controlled Endo-Exothermic Disposal of Industrial Wastes, by R. D. Reed .....Sep 123
Controlling Environment in Gas Bearing Rooms of Gyro Facility, by J. D. Truslow Jun 103; Sep *94*, *96*
Design Supply-Exhaust Loops To Serve Multiple Fume Hoods .....Sep 135; *Nov* 78
Don't Segregate Air and Water Pollution, Control Both—Now ....Aug 44
Estimate for Leaktight Ceiling with HEPA Filters May Be High (Open for Discussion), by R. H. Avery *Jan* 102
Evaluate Performance of HEPA Filters in Clean Benches, by A. G. Leary and E. B. Radden Sep 117; .....*Nov* 80
Five Auto Makers First To Meet Federal Air Pollution Control Standards for '68 Models .....Sep 50
Foundry Ventilation: Model for Tomorrow, by E. J. Weiss Apr 99; *Jul* 85
Foundry Ventilation Techniques Within Reach of All Industry (Open for Discussion), by J. C. Barrett ....*Jul* 85
Fume Hood Concept Very Practical—in Most Cases (Open for Discussion), by J. A. Holbrook .....*Nov* 78
Glove Box System Provides Atmosphere for Transistor Manufacture, by P. A. Sonntag .....Aug 99
Government Urged To Underwrite Cost of Air Pollution Abatement Jul 43
Governmental Air Pollution Regulations: A Challenge to the Heating Oil Industry .....Jun 58
Guidelines for Leak-Free HEPA Filter Framing (Open for Discussion), by J. C. Little .....*Nov* 80
How To Avoid Mechanical Design Problems in Laboratory Facilities, by S. Heider .....Apr 118; *Aug* 80
How To Succeed in Controlling Air Pollution by Really Trying, by T. Elliott .....Aug 112
Lists Engineering Problems in Bioclean Room Guidelines (Open for Discussion), by O. F. Smith ....*Jan* 102
Industrial Ventilation Conference Highlights Air Pollution .....Dec 44
Measurement and Analysis of Air and Water Pollutants, by J. W. Brant .....Dec 60
Mechanical Systems Designed for Safety in Israeli Research Reactor Building, by S. Agnon .....Oct 137
Microbial Control in Spotlight at AACC Meeting .....Sep 140
National Tuberculosis Association Forms Air Conservation Commission .....Jun 220
Need Bearing Operation Data at Various Contamination Levels (Open for Discussion), by J. D. Stockham .....*Sep* 94
Need Standardization for Leak Testing (Open for Discussion), by R. H. Avery .....*Nov* 80
Negative Impressions of Clean Rooms Are Valid (Open for Discussion), by O. F. Smith .....*Aug* 79
New York Clean Air Committee Endorses Transportation Capital Facilities Bond Issue .....Sep 240
Observing a Gyro Assembly Operation .....Nov 40
On-Off Compressor Cycling Not Ideal for Close Temperature Control (Open for Discussion), by O. F. Smith .....*Sep* 96
Plan Air Pollution Control Program Now for Existing Installations Dec 35
Portable Test Unit Helps Give Parameters for Controlling Fume Emissions from Auto Paint Bake Ovens .....Sep 48
Rent-a-Minicar May Cut Air Pollution .....Aug 50
Results of Bioclean Room Survey, by J. D. Stockham, C. Hagen, S. Miller, M. Nelson, and D. Roberts .....May 115; *Aug* 79
"Split-Function" Cooling Cycle for Vertical Laminar Flow Clean Rooms, by J. A. Weber .....Nov 113
Tells Experience with Recirculated Lab Air, Auxiliary Supplied Hoods (Open for Discussion), by E. J. Williams .....*Aug* 80
The Future in Air Pollution Control, by J. H. Ludwig .....Dec 65

COOLING

A Process's Cooling Tower and Its Control, by A. J. Cerofeci and E. N. Seiler .....Apr 113
Added Owning Cost Wipes Out Saving in Operating Cost (Open for Discussion), by R. Romancheck *Mar* 99
All New Kansas Schools Fully Air Conditioned (Open for Discussion), by G. W. Reida .....*Jul* 86
Analyzing Dual Duct Performances Under Varying Load Conditions, by D. R. Harper ....Jan 156; *May* 94
Application and Design of Electric Heat Pump Systems, by F. H. Bridgers .....Feb 98
Asks Clarification of Economic Analysis of Systems (Open for Discussion), by M. Meckler .....*Feb* 68
Assumptions, Conditions, Limitations in Evaporative Cooling Design Method (Open for Discussion), by F. G. Furse .....*Jun* 89
Automatic Control Design for Office-Plant-Cafeteria Complex, by F. F. Stevenson .....Feb 118
Balance and Control of Internal Heat Source System, by D. L. Grumman .....Jan 189
Cellular Cooling Tower Fill, by G. W. Meek .....Dec 84
Centralized All-Electric Systems, by E. W. Bryan .....Feb 84
Choose District Plant for One-Stop Government Complex, by S. A. Fredrickson .....Jun 108
Clarifies Ventilation Code for Virginia Schools (Open for Discussion), by N. R. Waldrop, Jr. *Jul* 86
Compare Alternate System Costs for District Chilled Water Plant, by J. S. Blossom .....Jul 103
Considerations in Designing, Expanding District Plants (Open for Discussion), by M. Backer .....*May* 100
Controlling Environment in Gas Bearing Rooms Of Gyro Facility, by J. D. Truslow Jun 103; .....*Sep* 94, 96
Controls for Total Energy Systems, by J. K. Gogia .....Apr 132
Conventional Air Conditioning More Economical than Evaporative Cooling (Open for Discussion), by A. Aharoni .....Jun 89

Convert Water Chiller from Two- to Four-Pass Unit To Stop Short Cycling, by A. D. Sullivan ....Apr 124
Cooling Computers, by M. N. Birken ....Jun 125
Criteria for All-Electric System Use, by A. H. Smith ....Jan 181
Decentralized All-Electric Systems, by R. L. Boyd ....Feb 86
Describes Division of Labor with Radiant Panel Ceilings (Open for Discussion), by I. C. Park, Jr. *May 96*
Design for Automatic Cooling Tower Fill, Drain, by R. W. Flanagan Apr 128
Economic Aspects of Fuels and Systems in a High-Rise Apartment, by S. A. Silver ....Jan 194
Eight Year Recovery Period for Added Investment Too Long (Open for Discussion), by C. B. Grund ....*Mar 99*
Estimate Only 2 Percent Return on Investment (Open for Discussion), by P. R. Dwyer ....*Mar 100*
Four Plans for Expanding District Chilled Water Systems, by M. J. Wilson ....Jan 148; *Feb 67; May 100*
Gas Company Taps Its Lines To Operate Total Energy Plant in New Office Building, by L. Smith ....Jun 122
Gas Engines Drive Chillers at Detroit's Airport Complex ....Jan 354
Gas Pressurization for Total Energy Systems, by E. J. Sebastian ....Mar 154
Gas Turbine Driven Total Energy Systems, by R. E. Landerholm Mar 150
General Procedure for Economic Analysis of Onsite Energy Systems, by D. Sage ....Apr 149
High Velocity Peripheral, Low Pressure Interior Air for 12 Story Building ....Feb 38
How America's Schools Are Heated and Ventilated, by L. Smith ....Jan 139; *Jul 86*
How Insulating Glass Cuts Cooling Loads, by C. W. Pennington ....Aug 89
How To Avoid Mechanical Design Problems in Laboratory Facilities, by S. Heider ....Apr 118; *Aug 80*
Industrial Air Pollution Control ....Mar 179
Look Well—To Your Well Water, by L. T. Avery ....Feb 82
Low Velocity, Low Pressure, Dual Duct Systems Difficult To Balance (Open for Discussion), by R. W. Flanagan ....*May 94*
Mechanical Systems Designed for Safety in Israeli Research Reactor Building, by S. Agnon ....Oct 137
Moonlighting in Waikiki, by F. H. Kohloss ....Oct 99
More Precautions for Lab Hood Design (Open for Discussion), by E. L. Walls ....*May 92*
National Conference Hears Call for Action on Air Pollution Control, by T. Elliott ....Feb 112
Need Bearing Operation Data at Various Contamination Levels (Open for Discussion), by J. D. Stockham ....*Sep 94*
Need More Information for Lab Hood Design (Open for Discussion), by K. E. Robinson ....*May 91*
New Approach to Chilled Water Control, by R. E. Anderson ....Oct 130
Nomograph Determines Langelier and Ryznar Indexes of Cooling Water, by F. Caplan ....Nov 133
On-Off Compressor Cycling Not Ideal for Close Temperature Control (Open for Discussion), by O. F. Smith ....*Sep 96*
Operating Cost Savings Dwindle When Interest Rate Accounted for (Open for Discussion), by B. H. Turnage ....*Mar 100*
Operation and Maintenance of Total Energy Systems, by J. S.. Dukelow ....Apr 136
Performance and Capacity Control of Centrifugal Refrigeration Compressors, by R. E. Rayner ....Mar 132
Reciprocating Engine Heat Recovery Systems, by C. J. R. McClure Mar 160
Sees Better Economy with Less Standby (Open for Discussion), by A. C. Kirkwood ....*Mar 99*
7300 Ton Refrigeration System Will Serve Madison Square Garden Center ....Sep 52
Shading Coefficient Depends on Which Side of Pane Has Coating (Open for Discussion), by C. W. Pennington ....*Jul 85*
Solar Energy: Its Use and Control, by J. I. Yellot ....Mar 114; Apr 105; *Jul 85*
"Split-Function" Cooling Cycle for Vertical Laminar Flow Clean Rooms, by J. A. Weber ....Nov 113
Stainless Cooling Tower Is Decorative, Functional, by G. H. Weiner and A. A. Polizzi ....Jun 148
Steam Turbines Will Drive Refrigeration Machines at $40 Million Medical Center ....Mar 52
Study Shows How To Select Lab Hoods To Cut Cooling Costs, by J. R. Lynch ....Jan 133; *May 91, 92*
Tells Experience with Recirculated Lab Air. Auxiliary Supplied Hoods (Open for Discussion), by E. J. Williams ....*Aug 80*
35 Tons of Cooling, Perimeter Heating for Domed Restaurant Atop 21 Story Hotel ....Sep 54
The Gas Engine Is Alive, by R. C. Marsh ....Mar 142
Tips on Expanding University District Chilled Water Systems (Open for Discussion), by D. C. Pfeiffer Feb 67
Universal Building Complex Load and Energy Simulation Computer Program, by J. S. Askari ....Sep 106
Variable Volume Air Systems Cool Computers, People in Bank's New Operations Center ....Dec 77
Ventilation Design for Radiochemical Laboratories at Nuclear Research Center, by S. Agnon ....Nov 122
Water Treatment in Total Energy, by M. F. Obrecht ....Apr 141

DISTRIBUTION, VENTILATION

Adding Cooling in an Industrial Plant, by F. F. Stevenson ....Dec 96
Adopt Method Now, Refine It Later (Open for Discussion), by R. Lindahl ....*Apr 82*
Air Flow Around Buildings, by J. H. Clarke ....May 145; *Jul 86*
Air Moving Device Shipments Up 6% ....Nov 40
All New Kansas Schools Fully Air Conditioned (Open for Discussion), by G. W. Reida ....*Jul 86*
Analyzing Dual Duct Performance Under Varying Load Conditions, by D. R. Harper ....Jan 156; *May 94*
Asks Clarification of Economic Analysis of Systems (Open for Discussion), by M. Meckler ....*Feb 68*
Assumptions, Conditions, Limitations in Evaporative Cooling Design Method (Open for Discussion), by F. G. Furse ....*Jun 89*
ASTM Subcommittee Begins Work on Test (Open for Discussion), by H. J. Sabine ....*Apr 80*
Automatic Control Design for Office-Plant-Cafeteria Complex, by F. F. Stevenson ....Feb 118
Check End Reflection, Air Flow Measurement (Open for Discussion), by R. G. Nevins ....*Apr 88*
Choose District Plant for One-Stop Government Complex, by S. A. Fredrickson ....Jun 108
Clarifies Ventilation Code for Virginia Schools (Open for Discussion), by N. R. Waldrop Jr. ....*Jul 86*
Comfort: Yardstick for Industrial Ventilation, by T. Elliott ....Mar 128
Controlling Environment in Gas Bearing Rooms Of Gyro Facility, by J. D. Truslow ....Jun 103; *Sep 94, 96*
Conventional Air Conditioning More Economical Than Evaporative Cooling (Open for Discussion), by A. Aharoni ....*Jun 89*
Cooling Computers, by M. N. Birken ....Jun 125
Describes Silencer Tests, Results in Britain (Open for Discussion), by G. Berry ....*Apr 84*
Design Supply-Exhaust Loops To Serve Multiple Fume Hoods ....Sep 135; *Nov 78*
District Steam, Electrically Driven Chillers, Dual Duct Systems for CSA Bldg. ....May 52
Estimate for Leaktight Ceiling with HEPA Filters May Be High (Open for Discussion), by R. H. Avery *Jan 102*
Estimation of Air Infiltration Appears To Be Oversimplified (Open for Discussion), by G. H. Green ....*Jul 88*
Foundry Ventilation: Model for Tomorrow, by E. J. Weiss Apr 99; *Jul 85*
Foundry Ventilation Techniques Within Reach of All Industry (Open for Discussion), by J. C. Barrett *Jul 85*
Fume Hood Concept Very Practical—in Most Cases (Open for Discussion), by J. A. Holbrook ....*Nov 78*
Gas Company Taps Its Lines To Operate Total Energy Plant in New Office Building, by L. Smith ....Jun 122
High Velocity Peripheral, Low Pressure Interior Air for 12 Story Building ....Feb 38
How America's Schools Are Heated and Ventilated, by L. Smith ....Jan 139; *Jul 86*
How Can Expansion Be Accommodated in Air Ducts Operating at High Temperature? (Question of the Month) ....Jun 99; Jul 92
Check with Specialists in Foundry Ventilation, by K. E. Robinson Jun 99
How To Handle Duct Expansion Generally, by W. M. Harmon ....Jun 99
Joints Are Available; Here's How To Select Them, by H. B. Wayne ....Jul 92
Presents Data on Similar Systems Jun 100
Provide Complete Information to Expansion Joint Manufacturer, by E. Rivera ....Jun 100
Use Transition Pieces and Round Expansion Joints, by J. J. Burke Jun 100
How To Avoid Mechanical Design Problems in Laboratory Facilities, by S. Heider ....Apr 118; *Aug 80*
How To Check Fan Stability on Oversized Air Handlers, by A. N. Rogers ....Aug 127; *Sep 92*
How To Determine Building Infiltration Rates at Low Reynolds Numbers, by M. Meckler Mar 107; *Jul 88*
Input Approximations Make New Infiltration Procedure No Better (Open for Discussion), by H. J. Schrei ....*Jul 88*
Lists Engineering Problems in Bioclean Room Guidelines (Open for

Discussion), by O. F. Smith, Jr. *Jan* 102
Low Velocity, Low Pressure Dual Duct Systems Difficult To Balance (Open for Discussion), by R. W. Flanagan ..... *May* 94
Meanwhile, Back at the Reversed Golden Triangle (Open for Discussion), by H. G. Knutson .... *Jul* 86
Mechanical Systems Designed for Safety, in Israeli Research Reactor Building, by S. Agnon ..... Oct 137
Monitoring, Ventilating System Maintains Safe Levels of CO in Turnpike Tunnels ..... Jun 54
Moonlighting in Waikiki, by F. H. Kohloss ..... Oct 99
More Precautions for Lab Hood Design (Open for Discussion), by E. L. Walls ..... *May* 92
Need Bearing Operation Data at Various Contamination Levels (Open for Discussion), by J. D. Stockham ..... *Sep* 94
Need More Information for Lab Hood Design (Open for Discussion), by K. E. Robinson ..... *May* 91
Need Round Robin Testing To Validate Test Method (Open for Discussion), by M. J. Kodaras .... *Apr* 82
New Ceiling System Tested in New Air Lab, by L. S. Ries ..... Sep 143
No Agreement Yet on Rating with Air Flow (Open for Discussion), by G. J. Sanders ..... *Apr* 80
Nomograph Determines Fan Motor Size, by F. Caplan ..... Mar 139
Nomograph Determines Purification by Purge or Bypass, by F. Caplan ..... Jan 165
On-Off Compressor Cycling Not Ideal for Close Temperature Control (Open for Discussion), by O. F. Smith, Jr. ..... *Sep* 96
Procedure Must Be More Specific (Open for Discussion), by L. W. Goodfriend ..... *Apr* 86
Qualifies Method for Smoothing Out Fan Stall Dip (Open for Discussion), by R. A. Gerlitz ..... *Sep* 92
Re-entry Avoided with Low Exhaust, High Intake Stacks (Open for Discussion), by R. S. Brief ..... *Jul* 86
Replace Mixing Boxes in New Dual Duct Systems for Better Control, by F. F. Stevenson ..... Aug 135
"Split-Function" Cooling Cycle for Vertical Laminar Flow Clean Rooms, by J. A. Weber ..... Nov 113
Study Shows How To Select Lab Hoods To Cut Cooling Costs, by J. R. Lynch ..... Jan 133; *May 91*, 92
Tells Experience with Recirculated Lab Air, Auxiliary Supplied Hoods (Open for Discussion), by E. J. Williams ..... *Aug* 80
Test Fan, Silencer Together If Not Remote (Open for Discussion), by C. J. Trickler ..... *Apr* 80
Test Sidewall Grille Discharge Characteristics, by H. E. Straub ..... Oct 126
The Confusion in Testing and Balancing of Air Conditioning Systems, by R. E. Stockwell ..... Jul 114
The Higher the Velocity, the Less Useful the Unit (Open for Discussion), by L. F. Yerges ..... *Apr* 82
Thermostatically Controlled Fans Prevent Warm, Cool Air Stratification in Plant Conservatory ..... Jan 66
Utility Flexibility in School Science Labs Discussed, a Case History Cited at Seminar ..... Mar 58
Variable Volume Air Supply Selected To Air Condition Triangular Office Building ..... May 112; *Jul* 86
Variable Volume Air Systems Cool Computers, People in Bank's New Operations Center ..... Dec 77
Ventilation Design for Radiochemical Laboratories at Nuclear Research Center by S. Agnon ..... Nov 122
What Relationship Between Self-Noise, Pressure Drops? (Open for Discussion), by C. N. Rink .... *Apr* 79

HUMIDIFYING, DEHUMIDIFYING

Clean Room Facility Modified To Provide Winter Humidity Control ..... Nov 44
Employee Comfort in the Steel Industry (Open for Discussion) ..... Aug 80
Five Research Projects Given Top Priority at U of I Air Systems Center ..... Jul 52
Preventing Condensation on Stored Materials with Gas-Fired Infrared Heating, by F. J. Prince ..... May 125; Aug 80
"Split-Function" Cooling Cycle for Vertical Laminar Flow Clean Rooms, by J. A. Weber ..... Nov 113
Variable Volume Air Systems Cool Computers, People in Bank's New Operations Center ..... Dec 77

ODORS, STERILIZATION, IONIZATION

Controlled Endo-Exothermic Disposal of Industrial Wastes, by R. D. Reed ..... Sep 123
Estimate for Leaktight Ceiling with HEPA Filters May Be High (Open for Discussion), by R. H. Avery ..... *Jan* 102
Lists Engineering Problems in Bioclean Room Guidelines (Open for Discussion), by O. F. Smith Jr. *Jan* 102
Plan Air Pollution Control Program Now for Existing Installations Dec 35
Results of Bioclean Room Survey, by J. D. Stockham, C. Hagen, S. Miller, M. Nelson, and D. Roberts May 115

HEATING

GENERAL

Abolishing Student Draft Deferments Would Add To Educated Manpower Shortage Problem ..... Aug 50
"Action" Theme of ARI Show in January '68 ..... Sep 58
Add To Equal Employment Law ..Sep 56
A-E's and Unions To Be Discussed ..... Nov 202
AEC Considering Nuclear Plant in Maine ..... Dec 40
AEC Issues Nuclear Plant Permits Jun 42
AEC Permits Two Nuclear Plants in Illinois ..... May 60
AGA To License Fuel Cell Patents to Manufacturer on Nonexclusive Basis ..... Jun 56
Ahart Gets Contract for Thermodynamic Analysis of Three Post Office Buildings ..... Nov 46
Air Moving Device Shipments Up 10% ..... Jul 48
Air, Water Pollution Problems, Solutions in Chicago Area Discussed at Conference ..... Dec 42
All New Kansas Schools Fully Air Conditioned (Open for Discussion), by G. W. Reida ..... *Jul* 86
An Insurer's View of the Air Conditioning and Refrigeration Industry, by D. A. Naughton and W. B. Skidmore ..... May 132
ARCA Forms Technical Training Institute To Help Fill Industry Demand for Mechanics ..... Oct 46
ARCA, NWNHACA Plan To Merge ..... Nov 42
ARI Initiates Certification Program for Central Station Air Handling Units ..... Jul 48
ASHRAE Begins Studies on Thermal Environment ..... May 259
ASHRAE Names Special Task Group To Study Causes, Effects, Correction of Air Pollution ..... May 58
ASTM Elects Mardulier President Aug 195
Building Expected To Forge Ahead in 1967 Despite Tax Situation Jan 53
Building Subcontractor Failures Reported ..... May 52
Campbell New York Engineer of the Year ..... Aug 52
CEC Conference Probes GAO Study of Federal Architect-Engineer Contracting Procedures ..... Jun 46
CEC Publishes 1967-68 Directory Oct 197
Central Plant Heat Reclaim System Serves University Campus Complex ..... Dec 44
Central Plant Will Supply 20,000 Tons, 60,000 MBtuh for Complex of Buildings ..... Jan 58
Central Underground Plant Will Condition Four-City Block Complex in Johannesburg ..... Oct 48
Chairman for Chicago Specialty Contractors ..... Jan 56
Chamber of Commerce President Urges Coordinated Effort in Fight Against Pollution ..... Mar 58
Check These Items on Site Visits (Open for Discussion), by H. Kreisman ..... *Sep* 91
Choose District Plant for One-Stop Government Complex, by S. A. Fredrickson ..... Jun 108
Clarifies Ventilation Code for Virginia Schools (Open for Discussion), by N. R. Waldrop, Jr. ..... *Jul* 86
Clinic on Design, Operation, Maintenance To Be Held at American Power Conference ..... Apr 207
Committee Formed To Interpret ICBO's Uniform Mechanical Code ..... Dec 48
Computer Cuts Time for Project Specs ..... Dec 38
Continuous Duty/Standby: More for Less, by M. D. Ringler ..... Sep 120; *Nov* 75

Cooper Union Sets Up Air Pollution Center ....Aug 52
Cost Engineers Will Meet in Cleveland ....Jun 218
Criteria for All-Electric System Use, by A. H. Smith ....Jan 181
C/SD Not Practical When Cooling Not Required (Open for Discussion), by M. Olchoff ....*Nov* 75
CSI Schedules Annual Competition ....Nov 202
Danish Professor Develops Equation That Predicts Environmental Comfort Conditions ....May 60
Data Consultants Will Serve Engineers ....Jan 68
Describes Division of Labor with Radiant Panel Ceilings (Open for Discussion), by I. C. Park, Jr. *May* 96
Development of Natural Gas Fuel Cell Total Energy System Is Goal of New Organization ....Apr 48
Diesel Fuel Powered Total Energy Plant To Serve Pennsylvania Turnpike Service Plaza ....Sep 56
District Heating Serves Belgian Community, by P. Genicq ....Jun 143
District HTW System Serves NYU Campus, by P. L. Geiringer ....Sep 113
District Steam, Electrically Driven Chillers, Dual Duct Systems for GSA Bldg. ....May 52
Don't Segregate Air and Water Pollution, Control Both—Now ....Aug 44
Doubts Practical Value of Competitive Bidding Formula (Open for Discussion) by H. Kreisman ....*Jan* 101
Drexel Institute Courses Will Cover Corrosion; Boiler, Cooling Water Treatment ....Jul 44
Drexel Institute Gets Federal, Local Grants To Study Water, Solid Waste Pollution in East ....May 62
Electrical Control Systems Using Air Compressors??? (Open for Discussion), by W. L. Avery ....*Jan* 101
Employee Comfort in the Steel Industry (Open for Discussion) *Aug* 80
Engineering Professionalism: Tie Science to the Needs of Society Jun 41
English Study Confirms Savings from Job Planning ....Nov 35
Firm Formed To Study Air Pollution ....Jul 48
Five Research Projects Given Top Priority at University of Illinois Air Systems Center ....Jul 52
Foam Insulation To Minimize Temperature Fluctuations in Film Manufacturing Plant ....Jun 52
Forum on Fire Dampers in Air Handling Systems on the Agenda for ASHRAE Meeting This Month Jun 42
FPC Authorized Construction of 3403 Miles of Natural Gas Pipelines in Second Quarter ....Oct 44
FPC Study Shows Slight Drop in Cost of Storing Natural Gas Underground in 1965 ....Mar 268
Future Engineer Is Girl on the Go-Go ....Aug 42
Gas Company Taps Its Lines To Operate Total Energy Plant in New Office Building, by L. Smith ....Jun 122
Gas Industry Recommends Changes in Proposed Federal Safety Regulations ....Jun 52
Gas Total Energy System for New $4 Million Service Center ....Jan 60
Gas Total Energy System Generates 8000 KW for 28 Story Office Building ....Oct 44
Gives Case History Involving CD/S (Open for Discussion), by R. T. Danks ....*Nov* 75
Government Urged To Underwrite Cost of Air Pollution Abatement Jul 43
Government's Role in Pollution Control on Agenda for Southeastern Plant Conference ....Jul 50
Government Air Pollution Regulations: A Challenge to the Heating Oil Industry ....Jun 58
Hearings Start on Promotional Practices by Illinois Utilities ....Mar 56
Heat Pumps Interchange Btu's To Air Condition New Hospital Wing, by A. R. Chappell ....Dec 93
Heated Oil Through 25,000 ft of Piping Will Melt Show in Urban Renewal Area ....Jul 54
Heating and Air Conditioning USASI Standards Board Established ....Feb 37
Here Are Experience Data on Hospital's Central Control (Open for Discussion), by C. S. Eckler ....*Sep* 91
Honors, Awards Given at ASHRAE Meeting ....Aug 44
How America's Schools Are Heated and Ventilated, by L. Smith ....Jan 139; *Jul* 86
How Intermittent Firing Affects Boiler Efficiency, by J. M. Hartman ....Jun 120
How To Select Materials for Power Plants Will Be Told at Metallurgical Conference ....Jan 54
HPAC Reappoints Seven to Board of Consulting, Contributing Editors ....Apr 39
IEEE Conference Will Explore Economics of All-Electric Complexes, Thermoelectric Systems ....Mar 60
Industrial Relations Council for Pipefitters Elects Lynch Chairman ....Apr 44
Industrial Ventilation Conference Highlights Air Pollution ....Dec 44
Industry Manpower Survey Report Will Be Presented at ARI Meeting This Month ....Nov 203
Inlets and Outlets, Exhaust Air Cleaners Topics for Industrial Ventilation Conference ....Jan 64
Instant Pre-Qualification for Chicago Area Mechanical Specialty Contractors ....Jul 56
Integrated Ceiling System Conditions Bank's Operations Center ....May 232
International Consulting Engineers Congress Will Probe "Design Team" Approach to Building ....Apr 42
IRC Settles Colorado Labor Dispute ....Aug 48
IRC Settles North Dakota Dispute, Gives Interpretation of Texas Agreement ....Nov 48
Kroeker Oregon Engineer of the Year ....Jul 44
Lack of Manpower, Other Industry Problems Cited at ARI Annual Meeting ....Jan 60
Leslie Silverman Industrial Hygiene Fund Established at Harvard School of Health ....Mar 56
Liquefied Natural Gas Plant Will Store up to 50,000,000 Gallons Sep 50
Low Velocity Reheat, High Pressure Air Induction for 20 Story Australian Office Building ....Oct 38
Management and Technology Theme of Plant Engineering, Maintenance Show This Month ....Jan 56
Management Ideas in Action Keynote MCAA Convention ....Jun 112
Manpower Problem Is Impediment to the Future, McGrath Tells ASHRAE ....Mar 49
MCA of Iowa Formed, Cummings President ....Feb 37
McCormick Place Fire — Study Shows Prevention Measures Inadequate, Reveals Other Shortcomings ....Oct 115
Mechanical Contractors Tell How Grooved Pipe, Mechanical Couplings Save Them Time and Money, by J. H. Krooss ....Sep 101
Mechanics Welding Society Gives Merit Award to Edward A. Hobart ....Aug 46
Merits of Central Control Panel for Air Conditioning Discussed at Conference ....Mar 54
NACHVRO Elects Officers, Directors ....Apr 46
National Commission on Codes, Zoning, Taxes, Development Standards Will Study Urban Areas ....Mar 60
National Conference Hears Call for Action on Air Pollution Control, by T. Elliott ....Feb 112
National Conference on Air Pollution Held ....Jan 58
National Engineering Academy To Advise HUD ....Oct 46
Navy Awards Certificate of Appreciation for Joint Venture Architect-Engineer Project ....Aug 42
NBS Develops Apparatus for Measuring Thermal Expansion of Materials at High Temperatures ....Oct 46
Negative Impressions of Clean Rooms Are Valid (Open for Discussion), by O. F. Smith, Jr. ....*Aug* 79
Nevins Engineering Dean at Kansas State ....Sep 48
New Jersey Court Case Allocates Electric Heating Equipment to Mechanical Contract ....Jun 50
New, Improved NSPE Contract Documents ....Oct 196
Newly Formed Group To Conduct Pilot Study on Water Usage in Chicago Buildings ....Nov 42
NFPA Approves Use of Continuous Duty Standby Engines for Hospitals ....Aug 52
NFPA Reports on Building Fires Jun 48
NLRB: Federal Labor Law and the National Labor Relations Board Jul 98
NLRB: Its Role in Jurisdictional Disputes ....Nov 118
NLRB: The Groundrules Sep 131; Oct 123
NLRB: The Mechanism of Disputes ....Aug 119
NLRB: The Story Behind Work Preservation ....Nov 119
Nonresidential Building Construction Contracts Came To $1.8 Billion This August ....Nov 48
Nonresidential Building Construction Contracts Estimated at $19.2 Billion in '67 ....Sep 240
Nonresidential Building Construction Contracts Estimated at $20.5 Billion in '68 ....Dec 46
Nonresidential Building Construction Contracts Soared To $2.1 Billion in June ....Oct 42
Nonresidential Building Construction Contracts Totaled $1.713 Billion in March ....Jun 56
Nonresidential Building Construction Contracts Totaled $1.83 Billion in April ....Jul 43
Nuclear Power May Supply Half of All Electricity by Year 2000 ....May 51
Number of Buyers of Equipment for Plants Revealed in National Yellow Pages Survey ....Jun 48
Oil Heat Industry Calls For More Realistic Approach to Air Pollution Control Regulations ....Mar 52
On-Shore Central Plant Supplies Hot, Chilled Water to Off-Shore Restaurant ....May 56
Permits Issued for Four Nuclear Plants ....Jul 44
Plan Air Pollution Control Program Now for Existing Installations Dec 35
Planning Is the Key to Action, Federal Encroachment: Topics at AGA Convention ....Jan 68
Preventing Condensation on Stored Materials with Gas-Fired Infrared Heating, by F. J. Prince

.....May 125; *Aug* 80
Preventive Actions Needed Now To Increase Reliability of Equipment in Ammonia Plants .....Dec 40
Proposed Revised Constitution for NSPE Fails To Achieve Two-Thirds Majority Vote .....May 62
Reduce Illinois Utility Promotion Practices .....Aug 46
Report Summarizes Current Methods of Controlling Emissions from Nitric Acid Plants .....May 66
Results of Bioclean Room Survey, by J. D. Stockham, C. Hagen, S. Miller, M. Nelson, and D. Roberts .....May 115; *Aug* 79
Seminar Stresses Importance of Environmental Control in Buildings Jul 50
Single Energy Control Center Will Handle 19 Million KW Throughout New York .....Nov 204
Sixtieth Annual APCA Meeting: Economics, Manpower, Control, Sampling, Stack Analysis .....May 56
Strong Voluntary Standards System Urged To Prevent Mandatory Federal Regulation .....Mar 268
Students Design House of Future: Modular Structure with Built-in Self-purification .....Jul 46
The How and Why of Site Visits, by L. L. Perry, Sr. .....Aug 103; *Sep* 91
The Marks of Competence in Engineering Educators (Open for Discussion), by C. L. Herndon .....*Jul* 90
The Training of Plant Engineers (Open for Discussion), by R. T. Danks .....*Sep* 94
Tielines for New Building Rerouted To Maintain Services in Adjacent Buildings .....Jan 62
Total Water Treatment for City Within a City, by W. A. Haver and L. C. Bishop .....Oct 110
Training for Plant Operators at Penn State University (Open for Discussion), by J. Everetts, Jr. .....*Aug* 79
Truog Nichols Forms Energy Company .....Jul 48
20 Years of Power Plant Short Courses, by E. F. Hebrank and S. Konzo .....Jun 129; *Aug 79; Sep* 94
United Association Plans 14th Annual Instructor Training Program ....Jul 52
U.N. Names Sage Special Consultant .....Nov 44
Upstream Return Takeoff Stops Gravity Circulation in High-Rise Primary-Secondary System, by H. A. Boschert .....Nov 101
USASI Committees Plan Precoordination of Building Components and Systems .....Oct 42
U.S. Education Office Lists NATTS Com. .....Oct 196
Utilities Are Taking Steps To Prevent Future Power Failures .....Feb 42
Utilities, Industrial Plants Produced Nearly 108 Billion KWH of Electricity This March .....Aug 50
Value of Air Conditioning Installed in '68 Will Be Nearly $3.5 Billion, Survey Shows .....Oct 40
Variable Volume Air Supply Selected To Air Condition Triangular Office Building .....May 113
Vinther Will Lead ASHRAE in Developing Manpower, New Members .....Aug 41
Washington CEC Conducts Engineering Seminars .....May 66
Water Research Association Proposed .....Mar 54
Welding Procedures, Pipe Bending, Insurance Will Be Covered at 78th MCAA Convention .....Apr 46
Where Total Energy Systems Appear Feasible, by T. Elliott .....Jul 116

FUNDAMENTAL

Adds Reasons for Switch from Fuel Oil to Gas (Open for Discussion), by F. G. Bastick .....*May* 100
Analyzing Dual Duct Performance Under Varying Load Conditions, by D. R. Harper .....Jan 156; *May* 94
APEC Readies Computer Load Program .....Jan 155
Balance and Control of Internal Heat Source Systems, by D. L. Grumman .....Jan 189
Chelants: New Method of Cleaning and Maintaining Piping Systems, by C. M. Loucks .....Jul 95
Control Systems for Buildings Today .....Jul 153; *Sep* 91
Controlled Endo-Exothermic Disposal of Industrial Wastes, by R. D. Reed .....Sep 123
Correlate Air Handling Needs with Fire Risks (Open for Discussion), by A. I. McFarlan .....*Dec* 55
Design Thermal Conductivity Values for Fiberboards and Particleboards .....Nov 116
Do Standardized Specs Lead to Generalization? (Open for Discussion), by A. H. Smith .....*Aug* 84
Economic Aspects of Fuels and Systems in a High-Rise Apartment, by S. A. Silver .....Jan 194
Energy Sources of the Future, by W. T. Reid .....May 107
Energy Utilization in Today's Buildings, by D. L. Grumman .....Aug 123
Estimation of Air Infiltration Appears To Be Oversimplified (Open for Discussion), by G. H. Green ....*Jul* 88
Five Questions to Answer in Equipment Selection, by G. W. Neal Aug 109
Gas Engines Drive Chillers at Detroit's Airport Complex .....Jan 354
General Procedure for Economic Analysis of Onsite Energy Systems, by D. Sage .....Apr 149
Handling Input Data in Load Calculation Program, by J. R. Ahart .....Apr 161
Heat Exchanger Failures: Causes and Remedies, by F. Gall May 118; *Aug* 80
How To Determine Building Infiltration Rates at Low Reynolds Numbers, by M. Meckler Mar 107; *Jul* 88
High Reliability in Environmental Systems (Open for Discussion), by W. Viessman .....*Oct* 81
How Insulating Glass Cuts Cooling Loads, by C. W. Pennington ....Aug 89
How To Check Fan Stability on Oversized Air Handlers, by A. N. Rogers .....Aug 127; *Sep* 92
How To Control Electric Motors May 167
How To Select and Size Steam Traps, by W. H. Fogarty .....Jul 109
How Up-To-Date Codes Serve Industry, by C. M. Barnes .....May 129
In-Depth Look at Electric Heating and Controls, by G. W. Dunn Jan 184
Input Approximations Make New Infiltration Procedure No Better (Open for Discussion), by H. J. Schrei .....*Jul* 88
Low Velocity, Low Pressure Dual Duct Systems Difficult To Balance (Open for Discussion), by R. W. Flanagan .....*May* 94
Measurement and Analysis of Air and Water Pollutants, by J. W. Brant .....Dec 60
New Directions in Building Fire Safety .....Sep 165; *Dec* 55
NPPA Interprets Electrical Code on Overcurrent Protection in Duct Heaters .....May 58
Nomograph Permits Rapid Estimates of Equipment Cost, by F. Caplan .....Dec 99
Outline Input Data for Load Calculation Program, by J. R. Ahart Feb 129
Outline Output from Load Calculation Program, by J. R. Ahart Mar 171
Pollution Abatement: The Role of the FWPCA, by A. Printz .....Dec 68
Qualifies Method for Smoothing Out Fan Stall Dip (Open for Discussion), by R. A. Gerlitz .....*Sep* 92
Relibility Analysis: A Management Method for Today's Businessman, by D. K. Miller .....Jul 123; *Oct* 81
Removing Condensate from Heat Exchangers (Open for Discussion), by J. S. Spear .....*Aug* 80
Shading Coefficient Depends on Which Side of Pane Has Coating (Open for Discussion), by C. W. Pennington .....*Jul* 85
Solar Energy: Its Use and Control, by J. I. Yellott .....Mar 114; Apr 105; *Jul* 85
Standardization of Specifications, by E. P. Rossman .....Jun 133; *Aug* 84
Steam Traps: Operation and Application, by F. F. Stevenson .....Nov 110
The Economics of Boiler Replacement, by W. F. Zunker .....Mar 250
The Future in Air Pollution Control, by J. H. Ludwig .....Dec 65
Universal Building Complex Load and Energy Simulation Computer Program, by J. S. Askari .....Sep 106

DISTRICT & CENTRAL

Ball Joints Accommodate Expansion in New Piping at O'Hare Field, by R. H. Liles .....Feb 116
Choose District Plant for One-Stop Government Complex, by S. A. Fredrickson .....Jun 108
Compare MTW, High Pressure Steam for Distribution to Expanded Campus, by J. S. Blossom .....Aug 106
District Heating Serves Belgian Community, by P. Genicq .....Jun 143
District HTW System Serves NYU Campus, by P. L. Geiringer ....Sep 113

ELECTRIC

All New Kansas Schools Fully Air Conditioned (Open for Discussion), by G. W. Reida .....*Jul* 86
Balance and Control of Internal Heat Source Systems, by D. L. Grumman .....Jan 189
Centralized All-Electric Systems, by E. W. Bryan .....Feb 84
Clarifies Ventilation Code for Virginia Schools (Open for Discussion), by N. R. Waldrop, Jr. *Jul* 86
Criteria for All-Electric System Use, by A. H. Smith .....Jan 181
Decentralized All-Electric Systems, by R. L. Boyd .....Feb 86
Economic Aspects of Fuels and Systems in a High-Rise Apartment, by S. A. Silver .....Jan 194
Electrical Contractors Assoc. Starts Data Service on Electric Systems for Buildings .....Jun 220
How America's Schools Are Heated and Ventilated, by L. Smith ....Jan 139
In-Depth Look at Electric Heating and Controls, by G. W. Dunn .....Jan 184
Lighting Systems as Heat Sources, by C. S. Perkins .....Feb 93

Sales of Electricity Hit 1 Trillion KWH; Gas Pipelines To Span 1 Million Miles by 1980 ....Feb 37
35 Tons of Cooling, Perimeter Heating for Domed Restaurant Atop 21 Story Hotel ....Sep 54

HOT WATER

All New Kansas Schools Fully Air Conditioned (Open for Discussion), by G. W. Reida ....*Jul 86*
Ball j nts Accommodate Expansion in New Piping at O'Hare Field, by R. H. Liles ....Feb 116
Clarifies Ventilation Code for Virginia Schools (Open for Discussion), by N. R. Waldrop, Jr. *Jul 86*
Compare MTW, High Pressure Steam for Distribution to Expanded Campus, by J. S. Blossom ....Aug 106
Controls for Total Energy Systems, by J. K. Gogia ....Apr 132
Cooling, Cleaning Make Mechanical Seals Suitable for HTW Service (Open for Discussion), by H. Tankus ....Jun 94
Describes Division of Labor with Radiant Panel Ceilings (Open for Discussion), by I. C. Park, Jr. *May 96*
District Heating Serves Belgian Community, by P. Genicq ....Jun 143
District HTW System Serves NYU Campus, by P. L. Geiringer ....Sep 113
Gas Pressurization for Total Energy Systems, by E. J. Sebastian ....Mar 154
Gas Turbine Driven Total Energy Systems, by R. E. Landerholm ....Mar 150
General Procedure for Economic Analysis of Onsite Energy Systems, by D. Sage ....Apr 149
How America's Schools Are Heated and Ventilated, by L. Smith ....Jan 139
How To Pack Pumps and Valves for HTW Service (Open for Discussion), by G. R. McKillop ....*Jun 94*
Nomograph Determines Amount of Water Flashing into Steam, by F. Caplan ....Oct 147
Nomograph Determines Safety Valve Reactive Force, by F. Caplan ....Apr 155
Operation and Maintenance of Total Energy Systems, by J. S. Dukelow ....Apr 136
Reciprocating Engine Heat Recovery Systems, by C. J. R. McClure Mar 160
The Economics of Boiler Replacement, by W. F. Zunker ....Mar 250
The Gas Engine Is Alive, by R. C. Marsh ....Mar 142
Variable Volume Air Systems Cool Computers, People in Bank's New Operations Center ....Dec 77
Upstream Return Takeoff Stops Gravity Circulation in High-Rise Primary-Secondary System, by H. A. Boschert ....Nov 101
Water Treatment in Total Eenergy, by M. F. Obrecht ....Apr 141

STEAM (INCLUDING VACUUM & VAPOR)

Choose District Plant for One-Stop Government Complex, by S. A. Fredrickson ....Jun 108
Compare MTW, High Pressure Steam for Distribution to Expanded Campus, by J. S. Blossom ....Aug 106
Controls for Total Energy Systems, by J. K. Gogia ....Apr 132
Gas Engines Drive Chillers at Detroit's Airport Complex ....Jan 354
Gas Pressurization for Total Energy Systems, by E. J. Sebastian ....Mar 154
Gas Turbine Driven Total Energy Systems, by R. E. Landerholm ....Mar 150
General Procedure for Economic Analysis of Onsite Energy Systems, by D. Sage ....Apr 149
How Intermittent Firing Affects Boiler Efficiency, by J. M. Hartman Jun 120
How To Select and Size Steam Tarps, by W. H. Fogarty ....Jul 109
Nomograph Determines Safety Valve Reactive Force, by F. Caplan ....Apr 155
Operation and Maintenance of Total Energy Systems, by J. S. Dukelow ....Apr 136
Reciprocating Engine Heat Recovery Systems, by C. J. R. McClure Mar 160
Satisfying Today's Comfort Requirements with Steam Systems, by D. N. Crosthwait, Jr. ....Jan 173
Steam Traps: Operation and Application, by F. F. Stevenson ....Nov 110
The Economics of Boiler Replacement, by W. F. Zunker ....Mar 250
The Gas Engine Is Alive, by R. C. Marsh ....Mar 142
Water Treatment in Total Energy, by M. F. Obrecht ....Apr 141

WARM AIR

All New Kansas Schools Fully Air Conditioned (Open for Discussion), by G. W. Reida ....*Jul 86*
Analyzing Dual Duct Performance Under Varying Load Conditions, by D. R. Harper ....Jan 156; *May 94*
Automatic Control Design for Office-Plant-Cafeteria Complex, by F. F. Stevenson ....Feb 118
Clarifies Ventilation Code for Virginia Schools (Open for Discussion), by N. R. Waldrop, Jr. ....*Jul 86*
Foundry Ventilation: Model for Tomorrow, by E. J. Weiss Apr 99; *Jul 85*
Foundry Ventilation Techniques Within Reach of All Industry (Open for Discussion), by J. C. Barrett ....*Jul 85*
Gas-Fired Duct Furnace: Versatile and Economical Heating Package, by R. W. Qualley and R. L. Thompson ....Mar 120
Low Velocity, Low Pressure Dual Duct Systems Difficult To Balance (Open for Discussion), by R. W. Flanagan ....*May 94*
Nomograph Determines Fan Motor Size, by F. Caplan ....Mar 139

INFRARED

Employee Comfort in the Steel Industry (Open for Discussion) *Aug 80*
Gas Fired Infrared Heaters Serve Glass, Steel "Mini Shelter" for Bus Commuters ....May 54
Preventing Condensation on Stored Materials with Gas-Fired Infrared Heating, by F. J. Prince ....May 125; *Aug 80*

PIPING

GENERAL

Abolishing Student Draft Deferments Would Add to Educated Manpower Shortage Problem ....Aug 50
Add To Equal Employment Law Sep 56
A-E's and Unions To Be Discussed ....Nov 202
AEC Considering Nuclear Plant in Maine ....Dec 40
AEC Issues Nuclear Plant Permits Jun 42
AEC Permits Two Nuclear Plants in Illinois ....May 60
AGA To License Fuel Cell Patents to Manufacturer on Nonexclusive Basis ....Jun 56
Air, Water Pollution Problems, Solutions in Chicago Area Discussed at Conference ....Dec 42
An Insurer's View of the Air Conditioning and Refrigeration Industry, by D. A. Naughton and W. B. Skidmore ....May 132
ARCA Forms Technical Training Institute To Help Fill Industry Demand for Mechanics ....Oct 46
ASHRAE Names Special Task Group To Study Causes, Effects, Correction of Air Pollution ....May 58
ASTM Elects Mardulier President Aug 195
Building Expected To Forge Ahead in 1967 Despite Tax Situation Jan 53
Building Subcontractor Failures Reported ....May 52
Campbell New York Engineer of the Year ....Aug 52
CEC Conference Probes GAO Study of Federal Architect-Engineer Contracting Procedures ....Jun 46
CEC Publishes 1967-68 Directory Oct 197
Chairman for Chicago Specialty Contractors ....Jan 56
Check These Items on Site Visits (Open for Discussion), by H. Kreisman ....*Sep 91*
Computer Cuts Time for Project Specs ....Dec 38
Computer Program Determines Gas Flow Rates in Piping Systems ....Jul 56
Computer Programs on Piping, Others ....Dec 40
Cooper Union Sets Up Air Pollution Center ....Aug 52
Cost Engineers Will Meet in Cleveland ....Jun 218
CSI Schedules Annual Competition ....Nov 202
Data Consultants Will Serve Engineers ....Jan 68
District Steam, Electrically Driven Chillers, Dual Duct Systems for GSA Bldg. ....May 52
Don't Segregate Air and Water Pollution, Control Both—Now ....Aug 44
Doubts Practical Value of Competitive Bidding Formula (Open for Discussion), by W. L. Avery ....*Jan 101*

Drexel Institute Courses Will Cover Corrosion; Boiler, Cooling Water Treatment ....Jul 44
Drexel Institute Gets Federal, Local Grants To Study Water, Solid Waste Pollution in East ....May 62
Electrical Control Systems Using Air Compressors??? (Open for Discussion,) by W. L. Avery ....*Jan* 101
Engineering Professionalism: Tie Science to the Needs of Society Jun 41
Factored System Cuts Process Piping Cost Estimating Time ....Sep 47
Firm Formed To Study Air Pollution ....Jul 48
FPC Authorized Construction of 3403 Miles of Natural Gas Pipelines in Second Quarter ....Oct 44
FPC Okays Temporary Use of Experimental Pipeline Section Pending USASI Evaluation ....Jan 70
Future Engineer Is Girl on the Go-Go ....Aug 42
Gas Industry Recommends Changes in Proposed Federal Safety Regulations ....Jun 52
Gas Total Energy System for New $4 Million Service Center ....Jan 60
Government Urged To Underwrite Cost of Air Pollution Abatement Jul 43
Government's Role in Pollution Control on Agenda for Southeastern Plant Conference ....Jul 50
Heated Oil Through 25,000 ft of Piping Will Melt Snow in Urban Renewal Area ....Jul 54
Here Are Experience Data on Hospital's Central Control (Open for Discussion), by C. S. Eckler ....*Sep* 91
Honors, Awards Given at ASHRAE Meeting ....Aug 44
How To Select Materials for Power Plants Will Be Told at Metallurgical Conference ....Jan 54
HPAC Reappoints Seven to Board of Consulting, Contributing Editors Apr 39
Industrial Relations Council for Pipefitters Elects Lynch Chairman ....Apr 44
Inlets and Outlets, Exhaust Air Cleaners Topics for Industrial Ventilation Conference ....Jan 64
Instant Pre-qualification for Chicago Area Mechanical Specialty Contractors ....Jul 56
International Consulting Engineers Congress Will Probe "Design Team" Approach to Building ....Apr 42
IRC Settles Colorado Labor Dispute ....Aug 48
IRC Settles North Dakota Dispute, Gives Interpretation of Texas Agreement ....Nov 48
Kroeker Oregon Engineer of the Year ....Jul 44
Large Heat Exchangers for Acid Plant ....Sep 58
Liquefied Natural Gas Plant Will Store up to 50,000,000 Gallons Sep 50
Loucks To Conduct Seminar, Course on Chemical Cleaning, Plant Maintenance ....Aug 48
Management and Technology Theme of Plant Engineering, Maintenance Show This Month ....Jan 56
Management Ideas in Action Keynote MCAA Convention ....Jun 112
MCA of Iowa Formed, Cummings President ....Feb 37
McCormick Place Fire—Study Shows Prevention Measures Inadequate, Reveals Other Shortcomings ....Oct 115
Mechanical Contractors Tell How Grooved Pipe, Mechanical Couplings Save Them Time and Money, by J. H. Krooss ....Sep 101
Mechanics Welding Society Gives Merit Award to Edward A. Hobart ....Aug 46
National Engineering Academy To Advise HUD ....Oct 46
Navy Awards Certificate of Appreciation for Joint Venture Architect-Engineer Project ....Aug 42
NBS Develops Apparatus for Measuring Thermal Expansion of Materials at High Temperatures ....Oct 46
Nevins Engineering Dean at Kansas State ....Sep 48
New, Improved NSPE Contract Documents ....Oct 196
Newly Formed Group To Conduct Pilot Study on Water Usage in Chicago Buildings ....Nov 42
NFPA Reports on Building Fires Jun 48
NLRB: Federal Labor Law and the National Labor Relations Board Jul 98
NLRB: Its Role in Jurisdictionl Disputes ....Nov 118
NLRB — The Groundrules ....Sep 131; Oct 123
NLRB: The Mechanism of Disputes ....Aug 119
NLRB: The Story Behind Work Preservation ....Nov 119
Nomographs Speed Calculation of Partially Full Tank Contents, by F. Caplan ....Jul 131
Nonresidential Building Construction Contracts Came to $1.8 Billion This August ....Nov 48
Nonresidential Building Construction Contracts Estimated at $9.2 Billion in '67 ....Sep 240
Nonresidential Building Construction Contracts Estimated at $20.5 Billion in '68 ....Dec 46
Nonresidential Building Construction Contracts Soared To $2.1 Billion in June ....Oct 42
Nonresidential Building Construction Contracts Totaled $1.713 Billion in March ....Jun 56
Nonresidential Building Construction Contracts Totaled $1.83 Billion in April ....Jul 43
Nuclear Power May Supply Half of All Electricity by Year 2000 ....May 51
Number of Buyers of Equipment for Plants Revealed in National Yellow Pages Survey ....Jun 48
On-Shore Central Plant Supplies Hot, Chilled Water to Off-Shore Restaurant ....May 56
OSW Awards Grant for Testing Corrosion of Materials Used in Desalting Water ....Mar 269
Permits Issued for Four Nuclear Plants ....Jul 44
Philadelphia Apprentice Wins United Association Contest ....Oct 35
Plan Air Pollution Control Program Now for Existing Installations Dec 35
Planning Is the Key to Action, Federal Encroachment: Topics at AGA Convention ....Jan 68
Portable Leak Detector Indicates Hydrogen in Air, Gases ....Jan 70
Portable Power Tool Machines Weld Joints in the Field ....Mar 62
Preventive Actions Needed Now To Increase Reliability of Equipment in Ammonia Plants ....Dec 40
Production, Sales of Plastic Pipe, Fittings Estimated To Be 262 Million lb Last Year ....Mar 60
Proposed Revised Constitution for NSPE Fails To Achieve Two-Thirds Majority Vote ....May 62
Reduce Illinois Utility Promotion Practices ....Aug 46
Report Summarizes Current Methods of Controlling Emissions from Nitric Acid Plants ....May 66
Sales of Electricity Hit 1 Trillion KWH; Gas Pipelines To Span 1 Million Miles by 1980 ....Feb 37
Single Energy Control Center Will Handle 19 Million KW Throughout New York ....Nov 204
Sixtieth Annual APCA Meeting; Economics, Manpower, Control, Sampling, Stack Analysis ....May 56
Strong Voluntary Standards System Urged To Prevent Mandatory Federal Regulation ....Mar 268
Students Design House of Future: Modular Structure with Built-in Self-purification ....Jul 46
Technique Cuts Time and Cost of Bending Jacketed Piping ....Jun 58
The How and Why of Site Visits, by L. L. Perry, Sr. ....Aug 103; *Sep* 91
The Marks of Competence in Engineering Educators (Open for Discussion), by C. L. Herndon ....*Jul* 90
The Training of Plant Engineers (Open for Discussion), by R. T. Danks ....*Sep* 94
Three Snow Melting Systems Serve Mt. Rainer's Paradise Visitor Center ....Nov 38
Tielines for New Building Rerouted To Maintain Services in Adjacent Buildings ....Jan 62
Total Water Treatment for City Within a City, by W. A. Haver and L. C. Bishop ....Oct 110
Training for Plant Operators at Penn State University (Open for Discussion), by J. Everetts, Jr. ....*Aug* 79
Truog Nichols Forms Energy Company ....Jul 48
25,000 ft of Glass Drainlines, Vents for University's Biological Center ....Feb 40
20 Years of Power Plant Short Courses, by E. F. Hebrank and S. Konzo ....Jun 129; *Aug 79; Sep* 94
Ultrasonic Recording Scanner for Nondestructive Weld Inspection Dec 48
U.N. Names Sage Special Consultant ....Nov 44
United Association Plans 14th Annual Instructor Training Program ....Jul 52
U.S. Education Office Lists NATTS Com. ....Oct 196
USASI Committees Plan Precoordination of Building Components and Systems ....Oct 42
Utilities, Industrial Plants Produced Nearly 108 Billion KWH of Electricity This March ....Aug 50
Vinther Will Lead ASHRAE in Developing Manpower, New Members ....Aug 41
Washington CEC Conducts Engineering Seminars ....May 66
Waste Disposal Process Developed Sep 48
Welding Procedures, Pipe Bending, Insurance Will Be Covered at 78th MCAA Convention ....Apr 46

FUNDAMENTAL

A Mechanical Joint Under Pressure, by C. S. Parker ....Dec 89
Applying Lens Joint Orifice Adapters for High Pressure Process Piping, by J. A. Masek ....Aug 130
Asks Clarification of Optimum Orifice Plate Beta Ratio (Open for Discussion), by W. M. Marcinkowski *May* 96
Ball Joints Accommodate Expansion in New Piping at O'Hare Field, by R. H. Liles ....Feb 116
Ball Valves: Design, Selection, Usage ....Nov 145
Charts Determine Tank Drain Time, by F. Caplan ....Sep 149
Chelants: New Method of Cleaning and Maintaining Piping Systems, C. M. Loucks ....Jul 95

Cold Pulling Pipe? . . . Here's Help, by H. B. Ellis ....Oct 104; *Dec 55, 56*
Cold Springing Procedure Should Be a Compromise (Open for Discussion), by A. R. Donkersley ....*Dec 55*
Control Systems for Buildings Today .....Jul 153; *Sep 91*
Correlate Air Handling Needs with Fire Risks (Open for Discussion), by A. I. McFarlan .....*Dec 55*
Do Standardized Specs Lead to Generalization? (Open for Discussion), by A. H. Smith .....*Aug 84*
Energy Sources of the Future, by W. T. Reid .....May 107
Five Questions to Answer in Equipment Selection, by G. W. Neal Aug 109
Heat Exchanger Failures: Causes and Remedies, by F. Gall May 118; *Aug 80*
High Reliability in Environmental Systems (Open for Discussion), by W. Viessman .....*Oct 81*
How To Control Electric Motors May 167
How To Design Orifice Flange Assemblies, by J. A. Masek .....Jun 137
How To Design Orifice Meter Piping for Accurate Flow Measurement, by J. A. Masek .....Jan 167; *May 96*
How To Design Orifice Meter Runs To Remain Full of Process Fluid, by J. A. Masek .....Mar 124
How To Design Ring Joint Type Orifice Assemblies, by J. A. Masek Jul 119
How To Locate Orifice Meter Runs in Process Piping Systems, by J. A. Masek .....Feb 107
How To Position Orifice Flange Taps for Ease of Service and Repair, by J. A. Masek .....May 140
How To Use ASTM Specs for Better Piping Design, by H. Thielsch Mar 112
Interpretation of Queried Section of USA Code for Pressure Piping Apr 42
Interpretation of Queried Section of USA Code for Pressure Piping Oct 40
Interpretations of Queried Sections of USASI Code for Pressure Piping .....Dec 82
Is Cold Springing Really Necessary? (Open for Discussion), by C. S. Parker .....*Dec 56*
Measurement and Analysis of Air and Water Pollutants, by J. W. Brant .....Dec 60
New Computer Program for Pipe Stress Analysis, by T. E. Bridge Sep 127
New Computer Program Simplifies Data Gathering for Pipe Stress Analysis, by T. E. Bridge .....Aug 94
New Directions in Building Fire Safety .....Sep 165; *Dec 55*
Nomograph Determines Thrust at Pipe Bends, by F. Caplan .....Aug 137
Nomograph Permits Rapid Estimates of Equipment Cost, by F. Caplan .....Dec 99
On the Snaking of Pipelines, by J. E. Brock .....Jan 144; *Aug 84*
Orifice Flange Assemblies in Steam Piping, by J. A. Masek .....Oct 133
PIFL: Computer Program for Design and Analysis of Pipe Flow Systems, by B. Block .....Dec 71
Piping Flexibility Problems: Solve Them Experimentally, by R. G. Fenton .....Jun 115
Pollution Abatement: The Role of the FWPCA, by A. Printz .....Dec 68
Reliability Analysis: A Management Method for Today's Businessman, by D. K. Miller .....Jul 123; *Oct 81*
Removing Condensate from Heat Exchangers (Open for Discussion), by J. S. Spear .....*Aug 80*
Sliding Support Friction and Cryogenic Bowing, by C. S. Parker Nov 93
Snaking Pipeline May Buckle Upward or Obliquely (Open for Discussion), by R. G. Fenton .....*Aug 84*
Standardization of Specifications, by E. P. Rossman .....Jun 133; *Aug 84*
Study Shows How To Expand LP Gas System, Improve Its Operation, by P. Ziel .....Oct 117
Tool Provides Constant Purge of Inert Gas During Tube Welding ....May 66
USASI Plastic Piping Standards May 60
Where To Find Stress Intensification Factors (Open for Discussion), by J. A. Masek .....*Jan 102*

AIR & GAS

A Process Cooling Tower and Its Control, by A. J. Cerofeci and E. N. Seiler .....Apr 113
Computer Program Determines Gas Flow Rates in Piping Systems Jul 56
Cryogenic Gas Production Surges Ahead, Totaled 373 Billion cu ft Last Year .....Oct 48
Foundry Ventilation: Model for Tomorrow, by E. J. Weiss .....Apr 99; *Jul 85*
Foundry Ventilation Techniques Within Reach of All Industry (Open for Discussion), by J. C. Barrett ....*Jul 85*
FPC Asks Congress To Establish Federal Authority for Gas Pipeline Safety Standards .....May 60
FPC Authorized Construction of 3403 Miles Of Natural Gas Pipelines in Second Quarter .....Oct 44
FPC Authorizes Three Year Program for Increasing Texas-to-New York Gas Pipelines .....Aug 52
FPC Okays Gas Flow Increase in Midwest .....Aug 195
Fixture Facilitates Helium Leak Testing of Pipe Welds .....Oct 50
How To Design Orifice Meter Piping for Accurate Flow Measurement, by J. A. Masek Jan 167; *May 96*
Maximize Performance, Minimize Maintenance with Compressor-Drier for Control Air, by D. H. Spethmann and R. O. McDonald .....Feb 73
Nomograph Determines Air Consumption of Pneumatic Cylinders, by F. Caplan .....Jun 131
O-rings with Plastic Backup Provide High Pressure Cryogenic Seal ..Sep 60
Portable Leak Detector Indicates Hydrogen in Air, Gases .....Jan 70
Study Shows How To Expand LP Gas System, Improve Its Operation, by P. Ziel .....Oct 117

OIL

Heated Oil Through 25,000 ft of Piping Will Melt Snow in Urban Renewal Area .....Jul 54
How To Design Orifice Meter Piping for Accurate Flow Measurement by J. A. Masek .....Jan 167; *May 96*

PROCESS LIQUIDS

Applying Lens Joint Orifice Adapters for High Pressure Process Piping, by J. A. Masek .....Aug 130
Asks Clarification of Optimum Orifice Plate Beta Ratio (Open for Discussion), by W. M. Marcinkowski .....*May 96*
How To Design Orifice Flange Assemblies, by J. A. Masek .....Jun 137
How To Design Orifice Meter Piping for Accurate Flow Measurement, by J. A. Masek .....Jan 167
How To Design Orifice Meter Runs To Remain Full of Process Fluid, by J. A. Masek .....Mar 124
How To Design Ring Joint Type Orifice Assemblies, by J. A. Masek .....Jul 119
How To Position Orifice Flange Taps for Ease of Service and Repair, by J. A. Masek .....May 140
How To Use ASTM Specs for Better Piping Design, by H. Thielsch Mar 112
Sliding Support Friction and Cryogenic Bowing, by C. S. Parker Nov 93
Study Shows How To Expand LP Gas System, Improve Its Operation, by P. Ziel .....Oct 117
25,000 ft of Glass Drainlines, Vents for University's Biological Center .....Feb 40

REFRIGERANT

New Tube Mill Produces Cooper Tube Coils up to 4 Miles Long .....Jan 54
Onsite Prefabrication Helps Beat 20 Day Deadline for Arena's Ice Rink Piping System .....Apr 40

SEMI-SOLIDS

Foundry Ventilation: Model for Tomorrow, by E. J. Weiss .....Apr 99; *Jul 85*
Foundry Ventilation Techniques Within Reach of All Industry (Open for Discussion), by J. C. Barrett ....*Jul 85*
Shipboard Pumps Send Sand Through Three Mile Pipeline to Fill Site of New City, by L. Smith .....Feb 79

STEAM

Foundry Ventilation: Model for Tomorrow, by E. J. Weiss .....Apr 99; *Jul 85*
Foundry Ventilation Techniques Within Reach of All Industry (Open for Discussion), by J. C. Barrett ....*Jul 85*
How To Design Orifice Meter Piping for Accurate Flow Measurement, by J. A. Masek .....Jan 167; *May 96*
Nomograph Determines Safety Valve Reactive Force, by F. Caplan ....Apr 155
Orifice Flange Assemblies in Steam Piping, by J. A. Masek .....Oct 133

WATER

Ball Joints Accommodate Expansion in New Piping at O'Hare Field, by R. H. Liles .....Feb 116
Calculate Equilibrium Concentration for Primary Coolant Purification Systems, by F. Caplan .....Feb 105
Chelants: New Method of Cleaning and Maintaining Piping Systems, by C. M. Loucks .....Jul 95
Considerations in Designing, Expanding District Plants (Open for Discussion), by M. Backer .....*May 100*
Cooling, Cleaning Make Mechanical Seals Suitable for HTW Service (Open for Discussion), by H. Tankus .....*Jun 94*
Design for Automatic Cooling Tower Fill, Drain, by R. W. Flanagan .....Apr 128
Four Plans for Expanding District Chilled Water Systems, by M. J. Wilson .....Jan. 148; *Feb 67; May 100*
How To Design Orifice Meter Piping for Accurate Flow Measurement, by J. A. Masek .....Jan 167; *May 96*
How To Pack Pumps and Valves for HTW Service (Open for Discussion), by G. R. McKillop .....*Jun 94*
Laundry Reclaims Waste Water Heat .....Sep 138

Nomograph Determines Safety Valve Reactive Force, by F. Caplan ....Apr 155
Steam Turbines Will Drive Refrigeration Machines at $40 Million Medical Center .....Mar 52
Tips on Expanding University District Chilled Water Systems (Open for Discussion), by D. C. Pfeiffer ..Feb 67
Water Pollution: Problems and Controls in Industry .....Jan 235
Water Treatment In Total Energy, by M. F. Obrecht .....Apr 141

NUCLEAR

AEC OKs Operation of Connecticut Nuclear Plant .....Sep 52
AEC's Revised Design Criteria for Nuclear Power Plant Permits Available for Comment .....Oct 197
Mechanical Systems Designed for Safety In Israeli Research Reactor Building, by S. Agnon .....Oct 137
Sales of Electricity Hit 1 Trillion KWH; Gas Pipelines To Span 1 Million Miles by 1980 .....Feb 37

BUILDING TYPE INDEX

COMMERCIAL BUILDINGS

APARTMENTS

Central Underground Plant Will Condition Four-City-Block Complex in Johannesburg .....Oct 48
Decentralized All-Electric Systems, by R. L. Boyd .....Feb 86
Economic Aspects of Fuels and Systems in a High-Rise Apartment, by S. A. Silver .....Jan 194
Operation and Maintenance of Total Energy Systems, by J. S. Dukelow .....Apr 136
Upstream Return Takeoff Stops Gravity Circulation in High-Rise Primary-Secondary System, by H. A. Boschert .....Nov 101
Value of Air Conditioning Installed in '68 Will Be Nearly $3.5 Billion, Survey Shows .....Oct 40
Where Total Energy Systems Appear Feasible, by T. Elliott .....Jul 116

HOTELS & CLUBS

Added Owning Cost Wipes Out Saving in Operating Cost (Open for Discussion), by R. Romancheck .....*Mar 99*
Central Underground Plant Will Condition Four-City-Block Complex in Johannesburg .....Oct 48
Decentralized All-Electric Systems, by R. L. Boyd .....Feb 86
Eight Year Recovery Period for Added Investment Too Long (Open for Discussion), by C. B. Grund ..*Mar 99*
Estimates Only 2 Percent Return on Investment (Open for Discussion), by P. R. Dwyer .....*Mar 100*
Motel Switches to Gas Absorption Air Conditioning as Part of Modernization .....Aug 183
Operating Cost Savings Dwindle When Interest Rate Accounted For (Open for Discussion), by B. H. Turnage .....*Mar 100*
Sees Better Economy with Less Standby (Open for Discussion), by A. C. Kirkwood .....*Mar 99*
Value of Air Conditioning Installed in '68 Will Be Nearly $3.5 Billion, Survey Shows .....Oct 40
Where Total Energy Systems Appear Feasible, by T. Elliott .....Jul 116

OFFICES

Analyzing Dual Duct Performance Under Varying Load Condition, by D. R. Harper .....Jan 156; *May 94*
Application and Design of Electric Heat Pump Systems, by F. H. Bridgers .....Feb 98
Asks Clarification of Economic Analysis of Systems (Open for Discussion), by M. Meckler .....*Feb 68*
Automatic Control Design for Office-Plant-Cafeteria Complex, by F. F. Stevenson .....Feb 118
Central Underground Plant Will Condition Four-City-Block Complex in Johannesburg .....Oct 48
Centralized All-Electric Systems, by E. W. Bryan .....Feb 84
Convert Water Chiller from Two- to Four-Pass Unit To Stop Short Cycling, by A. D. Sullivan .....Apr 124
Decentralized All-Electric Systems, by R. L. Boyd .....Feb 86
District Steam, Electrically Driven Chillers, Dual Duct Systems for GSA Bldg. .....May 52
Gas Company Taps Its Lines To Operate Total Energy Plant in New Office Building, by L. Smith ....Jun 122
Gas Total Energy Systems Generates 8000 KW for 28 Story Office Building .....Oct 44
Gas Turbine Driven Total Energy Systems, by R. E. Landerholm Mar 150
High Velocity Peripheral, Low Pressure Interior Air for 12 Story Building .....Feb 38
How America's Schools Are Heated and Ventilated by L. Smith .....Jan 139; *Jul 86*
Lighting Systems as Heat Sources, by C. S. Perkins .....Feb 93
Low Velocity, Low Pressure Dual Duct Systems Difficult To Balance (Open for Discussion), By R. W. Flanagan .....*May 94*
Low Velocity Reheat, High Pressure Air Induction for 20 Story Australian Office Building .....Oct 38
Meanwhile, Back at the Reversed Golden Triangle (Open for Discussion), by H. G. Knutson .....*Jul 86*
Moonlighting in Waikiki, by F. H. Kohloss .....Oct 99
Move Up to Complete Office Air Conditioning, by L. T. Avery ....May 138
Report Analyzes Operating Cost of Air Conditioning in Office Buildings .....Jun 42
The Economics of Boiler Replacement, by W. F. Zunker .....Mar 250
The Gas Engine Is Alive, by R. C. Marsh .....Mar 142
Value of Air Conditioning Installed in '68 Will Be Nearly $3.5 Billion, Survey Shows .....Oct 40
Variable Volume Air Supply Selected To Air Condition Triangular Office Building .....May 112; *Jul 86*
Where Total Energy Systems Appear Feasible, by T. Elliott .....Jul 116

RESTAURANTS, STORES & THEATERS

Assumptions, Conditions, Limitations in Evaporative Cooling Design Method (Open for Discussion), by F. G. Furse .....*Jun 89*
Automatic Control Design for Office-Plant-Cafeteria Complex, by F. F. Stevenson .....Feb 118
Central Underground Plant Will Condition Four-City-Block Complex in Johannesburg .....Oct 48
Conventional Air Conditioning More Economical than Evaporative Cooling (Open for Discussion), by A. Aharoni .....*Jun 89*
Eighty Year Old Theater Reopens, by H. J. Scharres .....Nov 106
Moonlighting in Waikiki, by F. H. Kohloss .....Oct 99
35 Tons of Cooling, Perimeter Heating for Domed Restaurant Atop 21 Story Hotel .....Sep 54
Value of Air Conditioning Installed in '68 Will Be Nearly $3.5 Billion, Survey Shows .....Oct 40
Where Total Energy Systems Appear Feasible, by T. Elliott .....Jul 116

OTHER COMMERCIAL BUILDINGS

Ball Joints Accommodate Expansion in New Piping at O'Hare Field, by R. H. Liles .....Feb 116
Integrated Ceiling System Conditions Bank's Operations Center .....May 232
McCormick Place Fire—Study Shows Prevention Measures Inadequate, Reveals Other Shortcomings .....Oct 115
Moonlighting in Waikiki, by F. H. Kohloss .....Oct 99
Onsite Prefabrication Helps Beat 20 Day Deadline for Arena's Ice Rink Piping System .....Apr 40
Variable Volume Air Systems Cool Computers, People in Bank's New Operations Center .....Dec 77
Where Total Energy Systems Appear Feasible, by T. Elliott .....Jul 116

INDUSTRIAL BUILDINGS

Adding Cooling in an Industrial Plant, by F. F. Stevenson .....Dec 96
Air Flow Around Buildings, by J. H. Clarke .....May 145; *Jul 86*
American Industrial Hygiene Conference Will Examine Noise, Air Pollution, Stack Design .....Apr 48
Assumptions, Conditions, Limitations in Evaporative Cooling Design Method (Open for Discussion), by F. G. Furse .....*Jun 89*
Automatic Control Design for Office-Plant-Cafeteria Complex, by F. F. Stevenson .....Feb 118
Controlled Endo-Exothermic Disposal of Industrial Wastes, by R. D. Reed .....Sep 123
Controlling Environment in Gas Bearing Rooms Of Gyro Facility, by J. D. Truslow ....Jun 103; *Sep 94, 96*
Conventional Air Conditioning More Economical than Evaporative Cooling (Open for Discussion), by A. Aharoni .....*Jun 89*
Employee Comfort in the Steel Industry (Open for Discussion) .....*Aug 80*
Estimate for Leaktight Ceiling with HEPA Filters May Be High (Open for Discussion), by R. H. Avery Jan 102
Foam Insulation To Minimize Temperature Fluctuations in Film Manufacturing Plant .....Jun 52
Foundry Ventilation: Model for Tomorrow, by E. J. Weiss .....Apr 99
Foundry Ventilation Techniques Within Reach of All Industry (Open for Discussion), by J. C. Barrett *Jul 85*
Glove Box System Provides Atmosphere for Transistor Manufacture, by P. A. Sonntag .....Aug 99
High Reliability in Environmental Systems (Open for Discussion), by W. Viessman .....*Oct 81*
How To Succeed in Controlling Air Pollution by Really Trying, by T. Elliott .....Aug 112
Laundry Reclaims Waste Water Heat .....Sep 138
Lists Engineering Problems in Bioclean Room Guidelines (Open for Discussion), by O. F. Smith, Jr. *Jan 102*
Mechanical Systems Designed for Safety in Israeli Research Reactor Building, by S. Agnon .....Oct 137
More Precautions for Lab Hood Design (Open for Discussion), by E. L. Walls .....*May 92*
Need Bearing Operation Data at Various Contamination Levels (Open for Discussion), by J. D. Stockham .....*Sep 94*
Needs More Information for Lab Hood Design (Open for Discussion), by K. E. Robinson .....*May 91*
Negative Impressions of Clean Rooms Are Valid (Open for Discussion), by O. F. Smith, Jr. .....*Aug 79*
On-Off Compressor Cycling Not Ideal for Close Temperature Control (Open for Discussion), by O. F. Smith, Jr. .....*Sep 96*
Preventing Condensation on Stored Materials with Gas-Fired Infrared Heating, by F. J. Prince .....May 125; *Aug 80*
Preventive Actions Needed Now To Increase Reliability of Equipment in Ammonia Plants .....Dec 40
Re-entry Avoided with Low Exhaust, High Intake Stacks (Open for Discussion), by R. S. Brief .....*Jul 86*
Results of Bioclean Room Survey, by J. D. Stockham, C. Hagen, S. Miller, M. Nelson, and D. Roberts .....May 115; *Aug 79*
Study Shows How To Select Lab Hoods To Cut Cooling Costs, by J. R. Lynch .....Jan 133; *May 91, 92*
System Reliability: Key to Manufacture of Semi-Conductors, by O. F. Smith, Jr. .....Jul 129; *Oct 81*
The Economics of Boiler Replacement, by W. F. Zunker .....Mar 250
The Gas Engine Is Alive, by R. C. Marsh .....Mar 142
Value of Air Conditioning Installed in '68 Will Be Nearly $3.5 Billion, Survey Shows .....Oct 40
Ventilation Design for Radiochemical Laboratories at Nuclear Research Center, by S. Agnon .....Nov 122
Water Pollution; Problems and Controls in Industry .....Jan 235

INSTITUTIONAL & PUBLIC BUILDINGS

HOSPITALS

CD/S Not Practical When Cooling Not Required (Open for Discussion), by M. Olchoff .....Nov 75
Continuous Duty/Standby: More for Less, by M. D. Ringler .....Sep 120; *Nov 75*
Describes Division of Labor with Radiant Panel Ceilings (Open for Discussion), by I. C. Park, Jr. *May 96*
Gives Case History Involving CD/S (Open for Discussion), by R. T. Danks .....*Nov 75*
Heat Pumps Interchange Btu's To Air Condition New Hospital Wing, by A. R. Chappell .....Dec 93
Here Are Experience Data on Hospital's Central Control (Open for Discussion), by C. S. Eckler ....*Sep 91*
How To Avoid Mechanical Design Problems In Laboratory Facilities, by S. Heider .....Apr 118; *Aug 80*
More Precautions for Lab Hood Design (Open for Discussion), by E. L. Walls .....*May 92*
Needs More Information for Lab Hood Design (Open for Discussion), by K. E. Robinson .....*May 91*
NFPA Approvess Use of Continuous Duty Standby Engines for Hospitals .....Aug 52
Steam Turbines Will Drive Refrigeration Machines at $40 Million Medical Center .....Mar 52
Study Shows How To Select Lab Hoods To Cut Cooling Costs, by J. R. Lynch .....Jan 133; *May 91, 92*
Tells Experience with Recirculated Lab Air, Auxiliary Supplied Hoods (Open for Discussion), by E. J. Williams .....*Aug 80*
Value of Air Conditioning Installed in '68 Will Be Nearly $3.5 Billion, Survey Shows .....Oct 40
Where Total Energy Systems Appear Feasible, by T. Elliott .....Jul 116

SCHOOLS

All New Kansas Schools Fully Air Conditioned (Open for Discussion), by G. W. Reida .....*Jul 86*
Central Plant Heat Reclaim System Serves University Campus Complex .....Dec 44
Clarifies Ventilation Code for Virginia Schools (Open for Discussion), by N. R. Waldrop, Jr. ....*Jul 86*
Compare Alternate System Costs for District Chilled Water Plant, by J. S. Blossom .....Jul 103
Compare MTW, High Pressure Steam for Distribution to Expanded Campus, by J. S. Blossom .....Aug 106
Considerations in Designing, Expanding District Plants (Open for Discussion), by M. Backer .....*May 100*
Design for Automatic Cooling Tower Fill, Drain, by R. W. Flanagan Apr 128
Design Supply-Exhaust Loops To Serve Multiple Fume Hoods .....Sep 135; *Nov 78*
District HTW System Serves NYU Campus, by P. L. Geiringer ....Sep 113
Four Plans for Expanding District Chilled Water Systems, by M. J. Wilson .....Jan 148; *Feb 67; May 100*
Fume Hood Concept Very Practical—in Most Cases (Open for Discussion), by J. A. Holbrook .....*Nov 78*
How To Avoid Mechanical Design Problems in Laboratory Facilities, by S. Heider .....Apr 118; *Aug 80*
More Precautions for Lab Hood Design (Open for Discussion), by E. L. Walls .....*May 92*
Need More Information for Lab Hood Design (Open for Discussion), by K. E. Robinson .....*May 91*
New Jersey Court Case Allocates Electric Heating Equipment to Mechanical Contract .....Jun 50
Study Shows How To Select Lab Hoods To Cut Cooling Costs, by J. R. Lynch .....Jan 133; *May 91, 92*
Tells Experience with Recirculated Lab Air, Auxiliary Supplied Hoods (Open for Discussion), by E. J. Williams .....*Aug 80*
25,000 ft of Glass Drainlines, Vents for University's Biological Center .....Feb 40
Utility Flexibility in School Science Labs Discussed, a Case History Cited at Seminar .....Mar 58
Value of Air Conditioning Installed in '68 Will Be Nearly $3.5 Billion, Survey Shows .....Oct 40
Where Total Energy Systems Appear Feasible, by T. Elliott .....Jul 116

OTHER INSTITUTIONAL & PUBLIC BUILDINGS

Ahart Gets Contract for Thermodynamic Analysis of Three Post Office Buildings ..... Nov 46
Choose District Plant for One-Stop Government Complex, by S. A. Fredrickson ..... Jun 108
Considerations in Designing, Expanding District Plants (Open for Discussion), by M. Backer ..... *May 100*
Diesel Fuel Powered Total Energy Plant To Serve Pennsylvania Turnpike Service Plaza ..... Sep 56
Four Plans for Expanding District Chilled Water Systems, by M. J. Wilson ..... Jan 148; *Feb 67; May 100*
How To Avoid Mechanical Design Problems in Laboratory Facilities, by S. Heider ..... Apr 118; *Aug 80*
7300 Ton Refrigeration System Will Serve Madison Square Garden Center ..... Sep 52
Stainless Cooling Tower Is Decorative, Functional, by G. H. Weiner and A. A. Polizzi ..... Jun 148
Tells Experience with Recirculated Lab Air, Auxiliary Supplied Hoods (Open for Discussion), by E. J. Williams ..... *Aug 80*
Three Snow Melting Systems Serve Mt. Rainier's Paradise Visitor Center ..... Nov 38

TRANSPORTATION

AIR, AUTOMOBILES

Five Auto Makers First To Meet Federal Air Pollution Control Standards for '68 Models ..... Sep 50
Monitoring, Ventilating System Maintains Safe Levels of CO in Turnpike Tunnels ..... Jun 54
New York Clean Air Committee Endorses Transportation Capital Facilities Bond Issue ..... Sep 240
Rent-a-Minicar May Cut Air Pollution ..... Aug 50

SPECIAL FEATURE INDEX

HPAC DATA SHEETS

Calculate Equilibrium Concentration for Primary Coolant Purification System, by F. Caplan ..... Feb 105
Charts Determine Tank Drain Time, by F. Caplan ..... Sep 149
Directory of Engineering Societies, Associations, Institutes ..... May 155
Nomograph Determines Air Consumption of Pneumatic Cylinders, by F. Caplan ..... Jun 151
Nomograph Determines Amount of Water Flashing into Steam, by F. Caplan ..... Oct 147
Nomograph Determines Fan Motor Size, by F. Caplan ..... Mar 139
Nomograph Determines Langelier and Ryznar Indexes of Cooling Water, by F. Caplan ..... Nov 133
Nomograph Determines Purification by Purge or Bypass, by F. Caplan Jan 165
Nomograph Determines Safety Valve Reactive Force, by F. Caplan ..... Apr 155
Nomograph Determines Thrust at Pipe Bends, by F. Caplan ..... Aug 137
Nomograph Permits Rapid Estimates of Equipment Cost, by F. Caplan ..... Dec 99
Nomographs Speed Calculation of Partially Full Tank Contents, by F. Caplan ..... Jul 131

HPAC ENGINEERING DATA FILES

Ball Valves: Design, Selection, Usage ..... Nov 145
Control Systems for Buildings Today ..... Jul 153; *Sep 91*
How To Control Electric Motors May 167
Industrial Air Pollution Control Mar 179
New Directions in Building Fire Safety ..... Sep 165; *Dec 55*
Water Pollution: Problems and Controls in Industry ..... Jan 235

HPAC LEGAL PAGES

Absolve Heating Contractor of Negligence in Explosion, by R. A. Brown ..... Jun 150
An Architect's Approval, by R. A. Brown ..... Aug 118
Contractor Won't Explain Prices—Gets Fined for Contempt of Court, by R. A. Brown ..... Nov 132
Elements of a Contract, by R. A. Brown ..... Oct 146
Engineer Gets Taken for a Ride By Contractor; Gets Even in Court, by R. A. Brown ..... Dec 88
Equity No Substitute for Mechanic's Lien, by R. A. Brown ..... May 139
Injured Employee Denied Workmen's Comp, by R. A. Brown ..... Jan 164
On Death And Taxes, by R. A. Brown ..... Mar 131
Sub Sues, Lawyers Lose, by R. A. Brown ..... Feb 115
Till Death Do Us Part, by R. A. Brown ..... Apr 130
Win Some, Lose Some, by R. A. Brown ..... Jul 122
Workman's Compensation: How Much? How Long?, by R. A. Brown ..... Sep 142

NLRB

NLRB: Federal Labor Law and the National Labor Relations Board Jul 98
NLRB: Its Role in Jurisdictional Disputes ..... Nov 118
NLRB: New Groundrules for Lockouts ..... Dec 133
NLRB: The Groundrules Sep 131; *Oct 123*
NLRB: The Mechanism of Disputes ..... Aug 119
NLRB: The Story Behind Work Preservation ..... Nov 119

COMPUTER CORNER

APEC Readies Computer Load Program ....Jan 155
APEC Shows Great Return On Member Investment, by J. R. Ahart Oct 157
Dealing with Fenestration in Load Calculation Program, by J. R. Ahart ....May 163
Handling Input Data in Load Calculation Program, by J. R. Ahart ....Apr 161
How Data Are Handled in Load Calculation Program, by B. E. Birdsall ....Jun 162
How Spec Writing Will Be Automated, by B. E. Birdsall ....Aug 145
In Anticipation of Automated Engineering, by B. E. Birdsall ....Jul 143
Outline Input Data for Load Calculation Program, by J. R. Ahart ....Feb 129
Outline Output from Load Calculation Program, by J. R. Ahart ....Mar 171
Progress Report: Automated Equipment Selection, by W. M. Gilford ....Dec 109

HPAC CONFERENCE: SINGLE ENERGY SOURCE SYSTEMS

Application and Design of Electric Heat Pump Systems, by F. H. Bridgers ....Feb 98
Balance and Control of Internal Heat Source Systems, by D. L. Grumman ....Jan 189
Centralized All-Electric Systems, by E. W. Bryan ....Feb 84
Controls for Total Energy Systems, by J. K. Gogia ....Apr 132
Criteria for All-Electric System Use, by A. H. Smith ....Jan 181
Decentralized All-Electric Systems, by R. L. Boyd ....Feb 86
Economic Aspects of Fuels and Systems in a High-Rise Apartment, by S. A. Silver ....Jan 194
Gas Pressurization for Total Energy Systems, by E. J. Sebastian ....Mar 154
Gas Turbine Driven Total Energy Systems, by R. E. Landerholm Mar 150
General Procedure for Economic Analysis of Onsite Energy Systems, by D. Sage ....Apr 149
In-Depth Look at Electric Heating and Controls, by G. W. Dunn Jan 184
Lighting Systems as Heat Sources, by C. S. Perkins ....Feb 93
Operation and Maintenance of Total Energy Systems, by J. S. Dukelow ....Apr 136
Reciprocating Engine Heat Recovery Systems, by C. J. R. McClure ..Mar 160
The Gas Engine Is Alive, by R. C. Marsh ....Mar 142
Water Treatment in Total Energy, by M. F. Obrecht ....Apr 141

HPAC CONFERENCE: AIR AND WATER POLLUTION CONTROL

Measurement and Analysis of Air and Water Pollutants, by J. W. Brant ....Dec 60
Pollution Abatement: The Role of the FWPCA, by A. C. Printz ..Dec 68
The Future in Air Pollution Control, by J. H. Ludwig ....Dec 65

AUTHOR INDEX

Agnon, S.—Mechanical Systems Designed for Safety in Israeli Research Reactor Building ....Oct 137
Agnon, S.—Ventilation Design for Radiochemical Laboratories at Nuclear Research Center ....Nov 122
Aharoni, A.—Conventional Air Conditioning More Economical than Evaporative Cooling (Open for Discussion) ....*Jun 89*
Ahart, J. R.—Outline Input Data for Load Calculation Program ....Feb 129
Ahart, J. R.—Outline Output from Load Calculation Program ....Mar 171
Ahart, J. R.—Handling Input Data in Load Calculation Program ....Apr 161
Ahart, J. R.—Dealing with Fenestration in Load Calculation Program ....May 163
Ahart, J. R.—APEC Shows Great Return on Member Investment ....Oct 157
Anderson, R. E.—New Approach to Chilled Water Control ....Oct 130
Askari, J. S.—Universal Building Complex Load and Energy Simulation Computer Program ....Sep 106
Avery, L. T.—Look Well—To Your Well Water ....Feb 82
Avery, L. T.—Move Up to Complete Office Air Conditioning ....May 138
Avery, R. H.—Estimate for Leaktight Ceiling with HEPA Filters May Be High (Open for Discussion) ....Jan 102
Avery, R. H.—Need Standardization for Leak Testing (Open for Discussion) ....*Nov 80*
Avery, W. L.—Electrical Control Systems Using Air Compressors (Open for Discussion) ....Jan 101
Backer, M.—Considerations in Designing Expanding District Plants (Open for Discussion) ....*May 100*
Barnes, C. M.—How Up-To-Date Codes Serve Industry ....May 129
Barrett, J. C.—Foundry Ventilation Techniques Within Reach of All Industry (Open for Discussion) *Jul 85*
Bastick, F. G.—Adds Reasons for Switch from Fuel Oil to Gas (Open for Discussion) ....*May 100*
Berry, G.—Describes Silencer Tests, Results in Britain (Open for Discussion) ....*Apr 84*
Birdsall, B. E.—How Data Are Handled in Load Calculation Program ....Jun 162
Birdsall, B. E.—In Anticipation of Automated Engineering ....Jul 143
Birdsall, B. E.—How Spec Writing Will Be Automated ....Aug 145
Birken, M. N.—Cooling Computers ....Jun 125
Bishop, L. C., and Haver, W. A.—Total Water Treatment for City Within a City ....Oct 110
Blossom, J. S.—Compare Alternate System Costs for District Chilled Water Plant ....Jul 103
Blossom, J. S.—Compare MTW, High Pressure Steam for Distribution to Expanded Campus ....Aug 106
Block, B.—PIFL: Computer Program for Design and Analysis of Pipe Flow Systems ....Dec 71
Boschert, H. A.—Upstream Return Takeoff Stops Gravity Circulation in High-Rise Primary-Secondary System ....Nov 101
Boyd, R. L.—Decentralized All-Electric Systems ....Feb 86
Brant, J. W.—Measurement and Analysis of Air and Water Pollutants ....Dec 60
Bridge, T. E.—New Computer Program Simplifies Data Gathering for Pipe Stress Analysis ....Aug 94
Bridge, T. E.—New Computer Program for Pipe Stress Analysis Sep 127
Bridgers, F. H.—Application and Design of Electric Heat Pump Systems ....Feb 98
Brief, R. S.—Re-entry Avoided with Low Exhaust, High Intake Stacks (Open for Discussion) ....*Jul 86*
Brock, J. E.—On The Snaking of Pipelines ....Jan 144
Brown, R. A.—Absolve Heating Contractor of Negligence in Explosion ....Jun 150
Brown, R. A.—An Architect's Approval ....Aug 118
Brown, R. A.—Contractor Won't Explain Prices—Gets Fined for Contempt of Court ....Nov 132
Brown, R. A.—Elements of a Contract ....Oct 146
Brown, R. A.—Engineer Gets Taken for a Ride by Contractor; Gets Even in Court ....Dec 88
Brown, R. A.—Equity No Substitute for Mechanic's Lien ....May 139
Brown, R. A.—Injured Employee Denied Workmen's Comp ....Jan 164
Brown, R. A.—On Death And Taxes ....Mar 131

Brown, R. A.—Sub Sues, Lawyers Lose ....Feb 115
Brown, R. A.—Till Death Do Us Part ....Apr 130
Brown, R. A.—Win Some, Lose Some ....Jul 122
Brown, R. A.—Workman's Compensation: How Much? How Long? Sep 142
Bryan, E. W.—Centralized All-Electric Systems ....Feb 84
Burke, J. J.—Use Transition Pieces and Round Expansion Joints (Question of the Month: How Can Expansion Be Accommodated in Air Ducts Operating at High Temperature? ....Jun 100
Burnam, C. M., Jr.—Management Ideas in Action Keynote MCAA Convention ....Jun 112
Caplan, F.—Nomograph Determines Purification by Purge or Bypass Jan 165
Caplan, F.— Calculate Equilibrium Concentration for Primary Coolant Purification System ....Feb 105
Caplan, F.—Nomograph Determines Fan Motor Size ....Mar 139
Caplan, F.—Nomograph Determines Safety Valve Reactive Force ....Apr 155
Caplan, F.—Nomograph Determines Air Consumption of Pneumatic Cylinders ....Jun 151
Caplan, F.—Nomographs Speed Calculation of Partially Full Tank Contents ....Jul 131
Caplan, F.—Nomograph Determines Thrust at Pipe Bends ....Aug 137
Caplan, F.—Charts Determine Tank Drain Time ....Sep 149
Caplan, F.—Nomograph Determines Amount of Water Flashing into Steam ....Oct 147
Caplan, F.—Nomograph Determines Langelier and Ryznar Indexes of Cooling Water ....Nov 133
Caplan, F.—Nomograph Permits Rapid Estimates of Equipment Cost Dec 99
Cerofeci, A. J., and Seiler, E. N.—A Process Cooling Tower and Its Control ....Apr 113
Chappell, A. R.—Heat Pumps Interchange Btu's To Air Condition New Hospital Wing ....Dec 93
Clarke, J. H.—Air Flow Around Buildings ....May 145
Crosthwait, D. N., Jr.—Satisfying Today's Comfort Requirements with Steam Systems ....Jan 173
Danks, R. T.—The Training of Plant Engineers (Open for Discussion) ....*Sep 94*
Danks, R. T.—Gives Case History Involving CD/S (Open for Discussion) ....*Nov 75*
Donkersley, A. R.—Cold Springing Procedure Should Be a Compromise (Open for Discussion) ....*Dec 55*
Dukelow, J. S.—Operation and Maintenance of Total Energy Systems ....Apr 136
Dunn, G. W.—In-Depth Look at Electric Heating and Controls ....Jan 184
Dwyer, P. R.—Estimates Only 2 Percent Return on Investment (Open for Discussion) ....*Mar 100*
Eckler, C. S.—Here Are Experience Data on Hospital's Central Control (Open for Discussion) ....*Sep 91*
Elliott, T.—National Conference Hears Call for Action on Air Pollution Control ....Feb 112
Elliott, T.—Comfort: Yardstick for Industrial Ventilation ....Mar 128
Elliott, T.—Where Total Energy Systems Appear Feasible ....Jul 116
Elliott, T.—How To Succeed in Controlling Air Pollution by Really Trying ....Aug 112
Elliott, T.—Microbial Control in Spotlight at AACC Meeting ....Sep 140
Ellis, H. B.—Cold Pulling Pipe? . . . Here's Help ....Oct 104
Everetts, J., Jr.—Training for Plant Operators at Penn State University (Open for Discussion) ....*Aug 79*
Fenton, R. G.—Piping Flexibility Problems: Solve Them Experimentally ....Jul 115
Fenton, R. G.—Snaking Pipeline May Buckle Upward or Obliquely (Open for Discussion) ....*Aug 84*
Flanagan, R. W.—Design for Automatic Cooling Tower Fill, Drain ....Apr 128
Flanagan, R. W.—Low Velocity, Low Pressure Dual Duct Systems Difficult To Balance (Open for Discussion) ....*May 94*
Fogarty, W. H.—How To Select and Size Steam Traps ....Jul 109
Fredrickson, S. A.—Choose District Plant for One-Stop Government Complex ....Jun 108
Furse, F. G.—Assumptions, Conditions, Limitations in Evaporative Cooling Design Method (Open for Discussion) ....*Jun 89*
Gall, F.—Heat Exchanger Failures: Causes and Remedies ....May 118
Geiringer, P. L.—District HTW System Serves NYU Campus ....Sep 113
Genicq, P.—District Heating Serves Belgian Community ....Jun 143
Gerlitz, R. A.—Qualifies Method for Smoothing Out Fan Stall Dip (Open for Discussion) ....*Sep 92*
Gilford, W. M.—Progress Report: Automated Equipment Selection Dec 109
Gogia, J. K.—Controls for Total Energy Systems ....Apr 132
Goodfriend, L. S.—Procedure Must Be More Specific (Open for Discussion) ....*Apr 86*
Green, G. H.—Estimation of Air Infiltration Appears To Be Oversimplified (Open for Discussion) ....*Jul 88*
Grumman, D. L.—Balance and Control of Internal Heat Source Systems ....Jan 189
Grumman, D. L.—Energy Utilization in Today's Buildings ....Aug 123
Grund, C. B., Jr.—Eight Year Recovery Period for Added Investment Too Long (Open for Discussion) ....*Mar 99*
Hagen, C., Miller, S., Nelson, M., Roberts, D., and Stockman, J. D.—Results Long of Bioclean Room Survey ....May 115
Harmon, W. M.—How To Handle Duct Expansion Generally (Question of the Month: How Can Expansion Be Accommodated in Air Ducts Operating at High Temperature? ....Jun 99
Harper, D. R.—Analyzing Dual Duct Performance Under Varying Load Conditions ....Jan 156
Hartman, J. M.—How Intermittent Firing Affects Boiler Efficiency Jun 120
Haver, W. A., and Bishop, L. C.—Total Water Treatment for City Within a City ....Oct 110
Hebrank, E. F., and Konzo, S.—Twenty Years of Power Plant Short Courses ....Jun 129
Heider, S.—How To Avoid Mechanical Design Problems in Laboratory Facilities ....Apr 118
Herndon, C. L.—The Marks of Competence in Engineering Educators (Open for Discussion) ....*Jul 90*
Hirschorn, M.—Why Fan Can't Be Noise Source (Open for Discussion) ....*Apr 88*
Holbrook, J. A.—Fume Hood Concept Very Practical—in Most Cases (Open for Discussion) ....*Nov 78*
Kirkwood, A. C.—Sees Better Economy with Less Standby (Open for Discussion) ....*Mar 99*
Knutson, H. G.—Meanwhile, Back at the Reversed Golden Triangle (Open for Discussion) ....*Jul 86*
Kodaras, M. J.—Need Round Robin Testing To Validate Test Method (Open for Discussion) ....*Apr 82*
Kohloss, F. H.—Moonlighting in Waikiki ....Oct 99
Konzo, S., and Hebrank, E. F.—Twenty Years of Power Plant Short Courses ....Jun 129
Kramer, D.—Reliability in Air Cooled Condensers ....Jul 127
Kreisman, H.—Doubts Practical Value of Competitive Bidding Formula (Open for Discussion) ....Jan 101
Kreisman, H.—Check These Items on Site Visits (Open for Discussion ....*Sep 91*
Krooss, J. H.—Mechanical Contractors Tell How Grooved Pipe, Mechanical Couplings Save Them Time and Money ....Sep 101
Landerholm, R. E.—Gas Turbine Driven Total Energy Systems ....Mar 150
Leary, A. G., and Radden, E. B.—Evaluate Performance of HEPA Filters in Clean Benches ....Sep 117
Liles, R. H.—Ball Joints Accommodate Expansion in New Piping at O'Hare Field ....Feb 116
Lindahl, R.—Adopt Method Now, Refine It Later ....*Apr 82*
Little, J. C.—Guidelines for Leak-Free HEPA Filter Framing (Open for Discussion) ....*Nov 80*
Loucks, C. M.—Chelants: New Method of Cleaning and Maintaining Piping Systems ....Jul 95
Ludwig, J. H.—The Future in Air Pollution Control ....Dec 65
Lynch, J. R.—Study Shows How To Select Lab Hoods To Cut Cooling Costs ....Jan 133
Marsh, R. C.—The Gas Engine Is Alive ....Mar 142
Masek, J. A.—Where To Find Stress Intensification Factors (Open for Discussion) ....Jan 102
Masek, J. A.—How To Design Orifice Meter Piping for Accurate Flow Measurement ....Jan 167
Masek, J. A.—How To Locate Orifice Meter Runs in Process Piping Systems ....Feb 107
Masek, J. A.—How To Design Orifice Meter Runs To Remain Full of Process Fluid ....Mar 124
Masek, J. A.—Asks Clarification of Optimum Orifice Plate Beta Ratio (Open for Discussion) ....*May 96*
Masek, J. A.—How To Position Orifice Flange Taps for Ease of Service and Repair ....May 140
Masek, J. A.—How To Design Orifice Flange Assemblies ....Jun 137
Masek, J. A.—How To Design Ring Joint Type Orifice Assemblies ....Jul 119
Masek, J. A.—Applying Lens Joint Orifice Adapters for High Pressure Process Piping ....Aug 130
Masek, J. A.—Orifice Flange Assemblies in Steam Piping ....Oct 133
McClure, C. J. R.—Reciprocating Engine Heat Recovery Systems ....Mar 160
McDonald, R. O., and Spethmann, D. H.—Maximize Performance, Minimize Maintenance with Compressor-Drier for Control Air ....Feb 73
McFarlan, A. I.—Correlate Air Handling Needs with Fire Risks (Open for Discussion) ....*Dec 55*
McKillop, G. R.—How To Pack

Pumps and Valves for HTW Service (Open for Discussion) ....*Jun* 94
Meckler, M.—How To Determine Building Infiltration Rates at Low Reynolds Numbers ....Mar 107
Meek, G. W.—Cellular Cooling Tower Fill ....Dec 84
Miller, D. K.—Reliability Analysis: A Management Method for Today's Businessman ....Jul 123
Miller, S., Nelson, M., Roberts, D., Stockman, J. D., and Hagen, C.—Results of Bioclean Room Survey ....May 115
Naughton, D. A., and Skidmore, W. B.—An Insurer's View of the Air Conditioning and Refrigeration Industry ....May 133
Neal, G. W.—Five Questions To Answer in Equipment Selection ....Aug 109
Nelson, M., Roberts, D., Stockman, J. D., Hagen, C., and Miller, S.—Results of Bioclean Room Survey ..May 115
Nevins, R. G.—Check End Reflection, Air Flow Measurement (Open for Discussion) ....*Apr* 88
Nisargand, U.—Operating Cost Savings Dwindle when Interest Rate Accounted for (Open for Discussion) ....*Mar* 100
Obrecht, M. F.—Water Treatment in Total Energy ....Apr 141
Olchoff, M.—CS/D Practical When Cooling Not Required (Open for Discussion) ....*Nov* 75
Park, I. C., Jr.—Describes Division of Labor with Radiant Panel Ceilings (Open for Discussion) ....*May* 96
Parker, C. S.—Sliding Support Friction and Cryogenic Bowing ....Nov. 93
Parker, C. S.—Is Cold Springing Really Necessary? (Open for Discussion) ....*Dec* 56
Parker, C. S.—A Mechanical Joint Under Pressure ....Dec 89
Pennington, C. W.—Shading Coefficient Depends on Which Side of Pane Has Coating (Open for Discussion) ....*Jul* 85
Pennington, C. W.—How Insulating Glass Cuts Cooling Loads ....Aug 89
Perkins, C. S.—Lighting Systems as Heat Sources ....Feb 93
Perry, L. L., Sr.—The How and Why of Site Visits ....Aug 103
Pfeiffer, D. C.—Tips on Expanding University District Chilled Water Systems (Open for Discussion) Feb 67
Polizzi, A. A., and Weiner, G. H.—Stainless Cooling Tower Is Decorative, Functional ....Jun 148
Prince, F. J.—Preventing Condensation on Stored Materials with Gas-Fired Infrared Heating ....May 125
Printz, A.—Pollution Abatement: The Role of the FWPCA ....Dec 68
Qualley, R. W., and Thompson, R. L.—Gas-Fired Duct Furnace: Versatile and Economical Heating Package ....Mar 120
Radden, E. B., and Leary, A. G.—Evaluate Performance of HEPA Filters in Clean Benches ....Sep 117
Rayner, R. E.—Performance and Capacity Control of Centrifugal Refrigeration Compressors ....Mar 133
Reed, Robert D.—Controlled Endo-Exothermic Disposal of Industrial Wastes ....Sep 123
Reid, T.—Energy Sources of the Future ....May 107
Reida, G. W.—All New Kansas Schools Fully Air Conditioned (Open for Discussion) ....*Jul* 86
Ries, L. S.—New Ceiling System Tested in New Air Lab ....Sep 143
Ringler, M. D. — Continuous Duty/Standby: More for Less ....Sep 120
Rink, C. N.—What Relationship Between Self-Noise, Pressure Drop? (Open for Discussion) ....*Apr* 79
Rivera, E.—Provide Complete Information To Expansion Joint Manufacturer (Question of the Month: How Can Expansion Be Accommodated in Air Ducts Operating at High Temperature?) ....Jun 100
Roberts, D., Stockman, J. D., Hagen, C., Miller, S., and Nelson, M.—Results of Bioclean Room Survey ..May 115
Robinson, K. E.—Need More Information for Lab Hood Design (Open for Discussion) ....*May* 91
Robinson, K. E.—Check with Specialists in Foundry Ventilation (Question of the Month: How Can Expansion Be Accommodated in Air Ducts Operating at High Temperature?) ....Jun 99
Rogers, A. N.—How To Check Fan Stability on Oversized Air Handlers ....Aug 127
Romancheck R.—Added Owning Cost Wipes Out Saving in Operating Cost (Open for Discussion) ....*Mar* 99
Rossman, E. P.—Standardization of Specifications ....Jun 133
Sabine, H. J.—ASTM Subcommittee Begins Work on Test (Open for Discussion) ....*Apr* 80
Sage, D.—General Procedure for Economic Analysis of Onsite Energy Systems ....Apr 149
Sanders, G. J.—No Agreement Yet on Rating with Air Flow (Open for Discussion) ....*Apr* 80
Scharres, H. J.—Eighty Year Old Theater Reopens ....Nov 106
Schrei, H. J.—Input Approximations Make New Infiltration Procedure No Better (Open for Discussion) ....*Jul* 88
Sebastian, E. J.—Gas Pressurization for Total Energy Systems ....Mar 154
Seiler, E. N., and Cerofeci, A. J.—A Process Cooling Tower and Its Control ....Apr 113
Silver, S. A.—Economic Aspects of Fuels and Systems in a High-Rise Apartment ....Jan 194
Skidmore, W. B., and Naughton, D. A.—An Insurer's View of the Air Conditioning and Refrigeration Industry ....May 133
Smith, A. H.—Criteria for All-Electric System Use ....Jan 181
Smith A. H.—Do Standardized Specs Lead to Generalization? (Open for Discussion) ....*Aug* 84
Smith, L.—How America's Schools Are Heated and Ventilated ....Jan 139
Smith, L.—Shipboard Pumps Send Through Three Mile Pipeline To Fill Site of New City ....Feb 79
Smith, L.—Gas Company Taps Its Lines To Operate Total Energy Plant in New Office Building ....Jun 122
Smith, O. F., Jr.—Lists Engineering Problems in Bioclean Room Guidelines (Open for Discussion) ....Jan 102
Smith, O. F., Jr.—System Reliability: Key to Manufacture of Semi-Conductors ....Jul 129
Smith, O. F., Jr.—Negative Impressions of Clean Rooms Are Valid (Open for Discussion) ....*Aug* 79
Smith, O. F., Jr.—On-Off Compressor Cycling Not Ideal for Close Temperature Control (Open for Discussion) ....*Sep* 96
Sonntag, P. A.—Glove Box Provides Atmosphere for Transistor Manufacture ....Aug 99
Spear, J. S.—Removing Condensate from Heat Exchangers (Open for Discussion) ....*Aug* 80
Spethmann, D. H., and McDonald, R. O.—Maximize Performance, Minimize Maintenance with Compressor-Drier for Control Air ....Feb 73
Stevenson, F. F.—Automatic Control Design for Office-Plant-Cafeteria Complex ....Feb 118
Stevenson, F. F.—Replace Mixing Boxes in New Dual Duct Systems for Better Control ....Aug 135
Stevenson, F. F.—Steam Traps: Operation and Application ....Nov 110
Stevenson, F. F.—Adding Cooling in an Industrial Plant ....Dec 96
Stockham, J. D.—Need Bearing Operation Data at Various Contamination Levels (Open for Discussion) ....*Sep* 94
Stockham, J. D., Hagen, C., Miller, S., Nelson, M., and Roberts, D.—Results of Bioclean Room Survey ....May 115
Stockwell, R. E.—The Confusion in Testing and Balancing of Air Conditioning of Systems ....Jul 114
Straub, H. E.—Test Sidewall Grille Discharge Characteristics ....Oct 126
Sullivan, A. D.—Convert Water Chiller from Two- to Four-Pass Unit To Stop Short Cycling ....Apr 124
Sullivan, A. D.—Masking the Moan from the Multizone ....Jun 145
Tankus, H.—Cooling, Cleaning Make Mechanical Seals Suitable for HTW Service (Open for Discussion) ..*Jun* 94
Thielsch, H.—How To Use ASTM Specs for Better Piping Design ..May 112
Thompson, R. L., and Qualley, R. W.—Gas-Fired Duct Furnace: Versatile and Economical Heating Package ....Mar 120
Trickler, C. J.—Test Fan, Silencer Together If Not Remote (Open for Discussion) ....*Apr* 80
Truslow, J. D.—Controlling Environment in Gas Bearing Rooms of Gyro Facility ....Jun 103
Viessman, W.—High Reliability in Environmental Systems (Open for Discussion) ....*Oct* 81
Waldrop, N. R., Jr.—Clarifies Ventilation Code for Virginia Schools (Open for Discussion) ....*Jul* 86
Walls, E. L.—More Precautions for Lab Hood Design (Open for Discussion) ....*May* 92
Wayne, H. B.—Joints Are Available: Here's How To Select Them (Question of the Month: How Can Expansion Be Accommodated in Air Ducts Operating at High Temperature?) ....Jul 92
Weber, J. A.—"Split-Function" Cooling Cycle for Vertical Laminar Flow Clean Rooms ....Nov 113
Weiner, G. H., and Polizzi, A. A.—Stainless Cooling Tower Is Decorative, Functional ....Jun 148
Weiss, E. J.—Foundry Ventilation: Model for Tomorrow ....Apr 99
Westburg, F. A.—Asks Clarification of Economic Analysis of Systems (Open for Discussion) ....Feb 68
Williams, E. J.—Tells Experience with Recirculated Lab Air, Auxiliary Supplied Hoods (Open for Discussion) ....*Aug* 80
Wilson, M. J.—Four Plans for Expanding District Chilled Water Systems ....Jan 148
Yellott, J. I.—Solar Energy: Its Use and Control ....Mar 114; Apr 105
Yerges, L. F.—The Higher the Velocity, the Less Useful the Unit (Open for Discussion) ....*Apr* 82
Ziel, P.—Study Shows How To Expand LP Gas System, Improve Its Operation ....Oct 117
Zunker, W. F.—The Economics of Boiler Replacemnt ....Mar 250